AIMING FOR A HEAVINESS

IMPLEMENTING A HEAVINESS WITH WOOD AS BUILDING MATERIAL ON A BED & BOX RETREAT

JULIUS ANDERSSON & OSKAR STARE
CHALMERS UNIVERSITY OF TECHNOLOGY
DEPARTMENT OF ARCHITECTURE AND CIVIL ENGINEERING
MASTER´S PROGRAMME OF ARCHITECTURE AND URBAN DESIGN (MPARC)
GRADUATION AND PUBLICATION YEAR: 2021
SUPERVISOR: MIKAEL EKEGREN
EXAMINER: BJÖRN GROSS

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ABSTRACT

This thesis investigates the possibility to express a heaviness through wooden structures in architecture. The historical reference and inspiration to our thesis is the style of brutalism architecture. The thesis aims to display how to achieve a heaviness in the expression using wood instead of other often-used heavy material such as stone, brick, and concrete. By replacing other heavy materials with wood, we allow the expression of heaviness to be achieved sustainably. We strongly believe that using renewable building material is the answer to sustainable architecture. In the shift to sustainable architecture, we do not need to lose the expression of heaviness in architecture. This thesis is primarily research by design-driven, where we are working with drawings and models to find out how we can implement our theory and research of heaviness into our design proposal.

Our focus lies on the aesthetic qualities and the perceived experience of heaviness within architecture. We believe that strong and good architecture relies on its proportions and expression. To achieve the heaviness we searched for, we needed to conduct model studies and to study different reference projects that have already achieved this. It was also in our interest to investigate how the expression of heaviness affected our perception of space.

By looking at the history of wooden buildings internationally and in the Nordic, we gain knowledge of how to contribute to contemporary wooden architecture in Sweden. With our thesis, we want to highlight glulam and CLT as building materials when creating contemporary architecture.

Our design proposal is a Bed & Box retreat where we bring horses and people together under the same roof. Our design proposal is an attempt to highlight the relationship between animals and architecture as well as the interaction and joined experience between people, animals, and architecture.

JULIUS ANDERSSON

ARCHITECTURAL BACKGROUND

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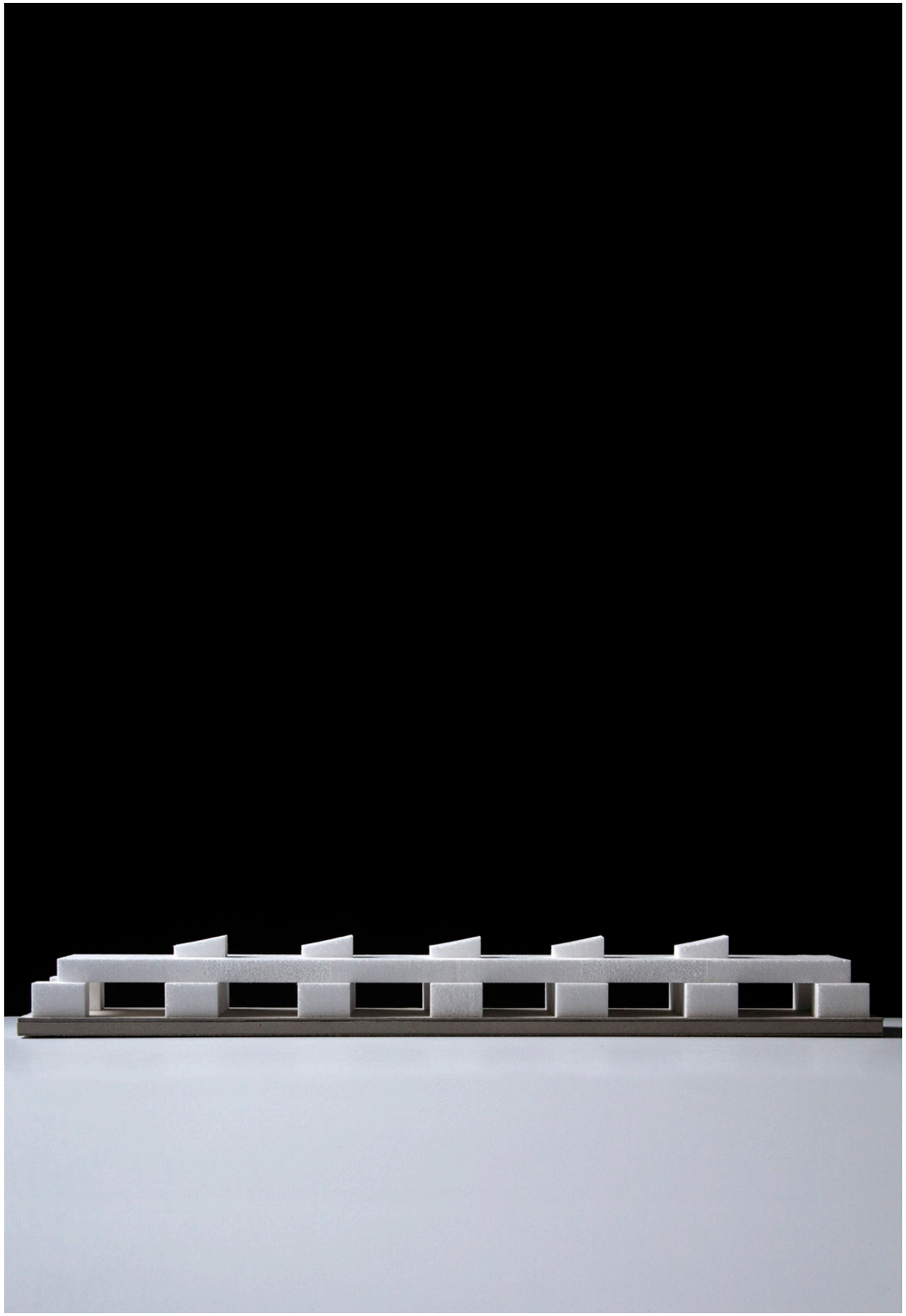


“Nothing requires the architect’s care more than the due proportions of buildings”

- Vitruvius

BACKGROUND

Last semester we conducted a research project where we through numerous spatial configurations investigated what heaviness meant for us. These spatial configuration investigations have been the steppingstone for our thesis. In the beginning of the year, we were invited by Wingårdhs architects to realise our theory and thesis about heaviness at their office. We were offered a personal desk and computer and free access to the whole office.

AIM & PURPOSE

The aim of our thesis is to explore how to create sustainable and contemporary architecture with high quality and great care of every detail. We believe that wood as the standard building material is the solution to a sustainable architecture. The aim is to introduce the aesthetics of heaviness in wooden structures and thus replacing other heavy building materials often used to achieve the same type of expression, ex, brick, concrete, and stone. With this architectural basis we want to make a Bed & Box facility where we can investigate how animals relates to architecture and showcase how the expression of heaviness can be achieved.

METHOD

Our thesis starts with prior knowledge about what heaviness means to us. This knowledge will be built upon with continuous spatial investigations of physical models on our design proposal throughout the whole process. Our thesis is a research by design driven project where we work mainly with physical models in order to achieve the heaviness we are searching for in our design proposal. In addition to our spatial investigations, we will conduct literature studies and look at different reference project where they have worked with a heaviness. Since our aim is also to offer a heaviness in a sustainable way, we will study wood as building material and put our focus on building technics such as glulam and clt.

DELIMITATIONS

Our thesis focus lies within the aesthetics of architecture where we will prioritise the expression of the building over more practical or economical solutions. Our design proposal is a conceptual proposal mainly and it will focus on showcasing a heaviness made of wood. However, we find it important to show a realistic design proposal where we realise our project through detailed technical drawings with a complete construction. We are not restricted to only use wood as a building material, but it will be our first choice.

THESIS QUESTIONS

Research question
How can you achieve the expression of a heaviness using wood?
How does the expression of heaviness affect our perception of space?

Sub-questions
How do you design a space both for humans and horses?
What does the presence of horses add to the architecture?

HEAVINESS

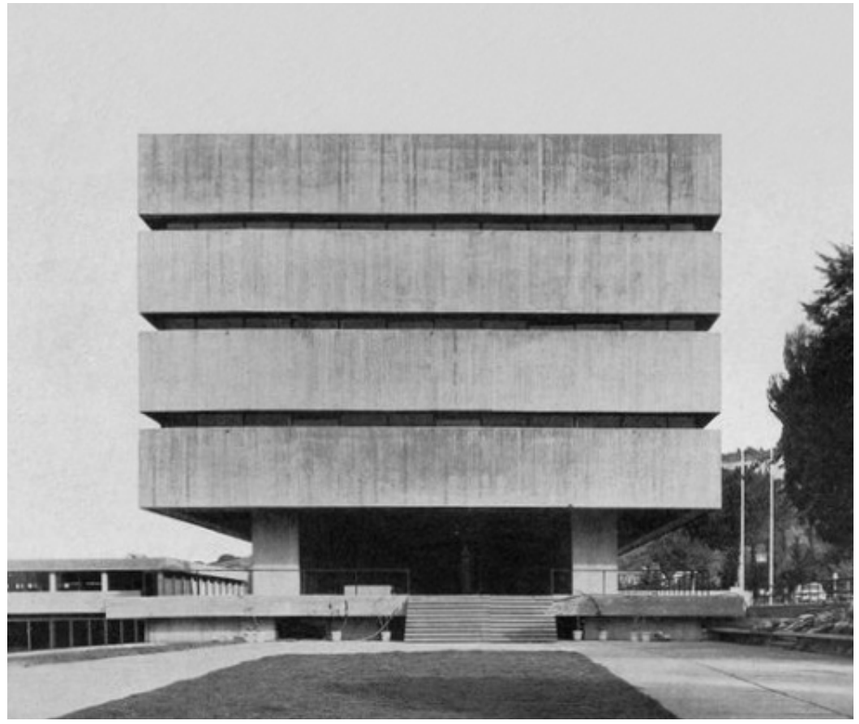
We believe that great architecture requires a clear and expressive aesthetic where the building speaks to its users. This can be achieved in numerous ways and aiming for a heaviness is only one possible solution from this approach. Apart from the importance of expression we also believe it is important to display different and new ways on how to use a building material. For example, wooden buildings are often designed with a light expression because that is the natural approach when using a light building material. It is also the most material-efficient, thus making it economically beneficial. We think that with wood as a renewable material you can use it in new ways, perhaps not as material efficient but still sustainable. We hope that with this thesis we can display how wood can replace other heavy building material that are often used to express a heaviness, to not lose the expression of heaviness in a more sustainable future of architecture.

Historically the type of heaviness we are aiming towards has been expressed before in brutalist architecture and other projects. These buildings have been the inspiration for us when we started our quest on aiming for a heaviness. Heaviness can be defined in lots of different ways; it is very much a subjecting adjective describing a specific type of expression that relates to heavy objects. What makes up a heavy object can be different factors in our opinion. The weight of course, but also the centre point of gravity, proportions, material, composition, etc. When we are aiming for a heaviness, we try to focus on the composition of objects, reducing the number of elements, creating a visually low CenterPoint of gravity. We think these parameters are of importance when for instance you are trying to achieve a heaviness with wood that we mainly associates as a light building material.

Picture of Dolmen (Le Rouzic)

HISTORICAL REFERENCE: BRUTALISM

Brutalism is a style of architecture that is still ongoing an evolution. Many brutalism buildings have been demolished in history due to a strong negative association. Thanks to the power of the image today, brutalism has regained its popularity and is once again respected. One of the first building classed as a brutalist building reach back to 1923, by Eric Mendelsohn. But brutalism had its peak after the world war II when large amount of the world needed to rebuild their cities. Brutalism then represented the possibility for a better, more functional, and forward looking way of creating homes. At this time, the modernism was to be considered the style of choice for architects. But brutalism was a result of architects experimenting trying to find other meaningful and more monumental expressions in architecture. Brutalism was a reaction to the clean and polite forms of Modernism. The lightness and flatness in the Modernism was to be considered as effete and bourgeois and quite banal. Brutalism focused more on achieving a strong and more monumental expression. The raw concrete is the signature of a brutalist building, the choice of material is what defined the buildings at first as brutal. Often the raw concrete was casted in raw wooden frames that left its imprint on the concrete surface (McLeod & Churly, 2018). The wood that made up the frames to cast the concrete has always been in the shadow. We believe it's time that the wood step forward even in brutalism, with new wooden technics such as glulam and CLT we believe it is more than appropriate. Brutalism is however more than a choice of material. This thesis is inspired by the strong aesthetic expression of brutalism. The shape, structure, form, and its overall expression is what draws our attention to the style. Brutalism buildings has a strong and clear expression in its form. The most common and in our opinion the most interesting expression in brutalist architecture is the expression of heaviness, that is also what our thesis will aim for.



Forum of the Technion, Haifa, Israel, 1966

BUILDING WITH WOOD

Wood has been used to construct buildings and homes for more than 10,000 years, making it one of the longest standing building material (Woods, 2016). We have chosen to focus on this ancient building material because we think it is also the material for the future. Wood has a big variety when its comes to how it can be used within a building. It has a strong load-bearing ability in relation to its own weight, thus giving it a big range in how to use it. Wood can be used both as a load-bearing structure and in interior details. It is a light material and a material that is easily processed and handled (Gustafsson, 2017).

Wood as a building material has become the symbol of sustainability within architecture today. It is a renewable building material that stores carbon dioxide. The storage of carbon dioxide is of crucial interest now when we are facing the climate crisis. Wood as a building material is also becoming more and more popular due to this (Lennartz & Jacob-Freitag, 2015). The Swedish forest is expanding in a velocity of 120 million forest cubic meters per year. From that growth we harvest each year up to 90 million. That means that we have a total growth of the Swedish forest with 20 million forest cubic meters per year because 10 milion dies from natural causes (SLU, 2016).

New technics with wood are implemented in order to replace other building materials. The production of wooden building materials has less energy consumption compare to other building materials (Gross, 2016). As a building material wood is light and easy to assembly and disassembly thus also making it suitable for reuse.

Picture of wood

GLULAM & CLT

Our thesis is focusing on Glulam & CLT as building materials and want to showcase the possibilities these possess when it comes to construction. The main reason why we have chosen to work with Glulam and CLT is the fact that they can be made together with lower quality of wood and still perform. This allows us to utilise the cut-down tree in an more efficient way (Svenskt trä, 2020). Glulam and CLT allows us to move into a sustainable society where renewable building material will be used in a efficient way.

Glulam consist of multiple layers of wood, arranged on top of each other and compound by glue with the grain running lengthwise (Kitek Kuzman, Oblak, Vratusa, 2010). Otto Hetzer was a german carpenter who invented the glulam technic in 1906. The material is primarily used for load-bearing structures such as beams and pillars. It is one of the strongest construction materials compared to its own weight. Glulam is also often used as an aesthetics feature in the interior. Furnitures can for example be made from glulam, visible beams and pillars can contribute to the interior atmosphere (Gross, 2016).

CLT consist of a minimum of three layers of timber that are glued together crosswise. The material is primarily used as wall elements or floor slabs and contribute to the stability of the building. The technic allows for a long span in the floor slabs, thus giving open floor plans with a minimum of pillars. CLT has similar construction properties as precast concrete, but it is much lighter and cheaper to transport. It has been used in Sweden since the late 1990s as a building material and the yearly production in Sweden are 15,000 cubic of panels which is predicted to increase (Gustafsson, 2017).

CLT elements (Martinsson)

2. REFERENCES

CLT & GLULAM

1. WERKHALLE AWEL
2. ABBA MUSEUM & HOTEL

HEAVINESS

3. VALLEY OF KINGS
4. STONEHENGE

DETAILS & STRUCTURE

5. LOUIS KAHN
6. PETER ZUMTHOR

GLULAM & CLT

1. WORKSHOP AWEL ANDELFINGEN

ROSSETTI + WYSS ARCHITECTS

2015, ANDELFINGEN DISTRICT, SWITZERLAND

Workshop AWEL Andelfingen consist of thirtysix glulam and clt elements and classifies as an AAA sustainable building. The amount of timber used in the building regrowes in Switzerland in 18 minutes and takes only two days to be assemblied. The building houses a workshop covering vehicles and machines and the construction is based on a traditional log stacking construction where the ambition has been to reduce the amount of ingreadients to the minimum. The building is reduced from decoration without any extra façade layers that do not fill its function, each wooden elements therefore has its own function. The structure is made visible both from the inside and the outside of the workshhop. (Archdaily, 2017)

There is two main thing that makes this building worth refering to when considering a heaviness. Firstly we beleive that when reducing the buildings components that makes up the compostion of the building, affects the heavy look. A simple construction or composition of elements is easier to understand and easier to associate to heaviness if done right. The second thing is the big dimensions they are introducing to the workshop. Adding big dimensions is an easy and effective way to achieve heaviness, but it wont work if its the only thing done.

Photograph of the exterior (Zimmermann, 2017)

CLT & GLULAM

2. ABBA MUSEUM & HOTEL

JOHAN CELSING ARKITEKTKONTOR

2013, STOCKHOLM, SWEDEN

The Abba museum and Hotel on Djurgården in Stockholm is partially made of CLT elements, used in a unique way. A traditional CLT building is usually using the CLT elements for the loadbearing structure or a part of the interior space, protected from water and wind. In this case Celsing have done the opposite, they have used 43 mm thick CLT elements as façade cladding while having a more traditional building material for the loadbearing structure. When covering the building with CLT it gives the observer the illusion of a solid wooden building. The facade is treated with multiply layers of glaze to protect the facade to last for a long time and not losing its shape. The building houses 48 hotel rooms, a restaurant and exhibition spaces (Arkitektur, 2013).

We want to highlight this project because we believe it is important to show that CLT elements can be used as facade cladding in the Nordic climate. The rhythm between the facade elements and the windows are showing a structure of stacked pillars and beams on top of each other which indicates a heaviness in the expression. The setbacks of the building on each floor also gives the building a lower center point of gravity and a heavier look.

Photograph of the exterior (Celsing, 2013)

HEAVINESS

3. DEIR EL-BAHRI

EGYPTIAN ARCHITECTURE

1550-1069 BC, VALLEY OF KINGS

Deir el-Bahri is a temple with the purpose to protect 64 tombs for the Egyptian royals. All the tombs inside the temple were cut out from the mountain itself. It was design as an extension of the existing cliff and is well integrated in the landscape. The volume of the building is following the shape of the landscape and consist of tree terrasses on top of each other, with each floor set backed towards the mountain (Magli, 2013). The front façade is showing a symmetrical and strict structure with large columns creating an arcade. The temple becomes one with the mountain due to the fact it is constructed by the same material, but also because of the composition of the building. The building possesses a low center point of gravity and expresses a heaviness.

We chose to refer to this project because Egyptian architecture overall has been an inspiration for us when it comes to heaviness and this project is a great example. The Egyptians used simple building techniques of stacked stones on top of each other and cutting directly out of the mountain. This technique gave simple structures but refined architecture, the reduction of things that make up the structure adds to the perceived heaviness.

Photograph of the Valley of the Kings (Lavtushenko)

HEAVINESS

4. STONEHENGE

TRILITHON

3000-2000 BC, WILLSHIRE, ENGLAND

Stonehenge consist of a total of 74 stones in a composition to form a circle, out the 74 stones there are 29 stacked on top of 30 uprights stones of different sizes creating trilithons. Some of the largest stones weight up to 23 tons and span up to 6,5m in height and 2,5m wide (Darvill, 2016). The upright stones are used more as they are while the stones on top are processed and handled to stay put. The creation of Stonehenge and its purpose is still not clear, there are many theories about why it was erected. One theory suggest that it was a place for burial of the elite (Kennedy, 2013).

We refer to this project because we find it fascinating how these heavy objects are stacked on top of each other. It is a simple composition of heavy stones, but the large scale of the stones together with the simple composition express a heaviness. We believe that the balancing factor is crucial when it comes to the perceived heaviness of Stonehenge. The composition relies on gravity and friction which you are very much aware of when experiencing the space. When these fundamental forces are at play in our perception of space, the expression of heaviness enters.

Photograph of Stonehenge, 1870 (Alamy stock photo)

DETAILS & STRUCTURE

5. LOUIS KAHN

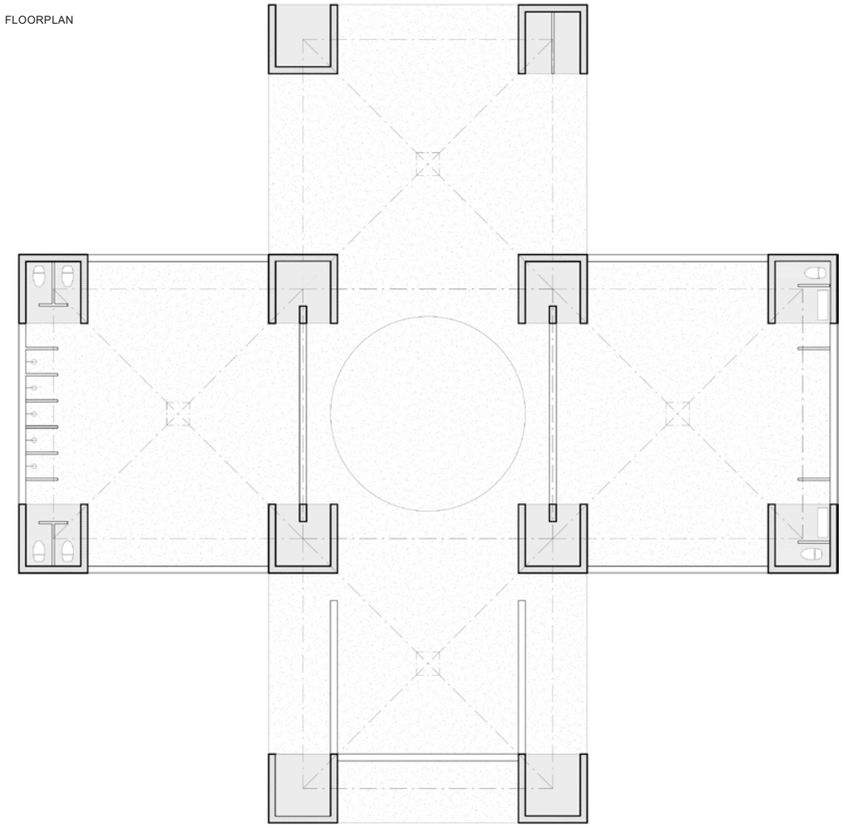
THE TRENTON BATH HOUSE

1955, NEW JERSEY, US

The Trenton bath house was built for the Jewish Community Center. The building is based on a classical Greek cross floorplan influenced by Villa Rotunda by Palladio. The floorplan consists of twelve pillar-blocks with dividing walls between. There are four individually pavilions surrounding a central courtyard. Each pillar-block is programed with different functions such as toilets and entrances. The dividing walls are made thin between each pillar-block and the roof is a light timber construction placed on top of the pillar-blocks (Gerfen, 2010).

This project by Louis Kahn is worth to mention because of how he emphasizes the pillars in the structure and making them the main spatial object. The pillars are becoming blocks and the blocks are then programed to make their oversize motivated. The large dimensions and the clear structure together express a heaviness.

FLOORPLAN



Photograph of the interior (Bouno, 2011)

Photograph of the exterior (Wikiarquitectura)

DETAILS & STRUCTURE

6. PETER ZUMTHOR

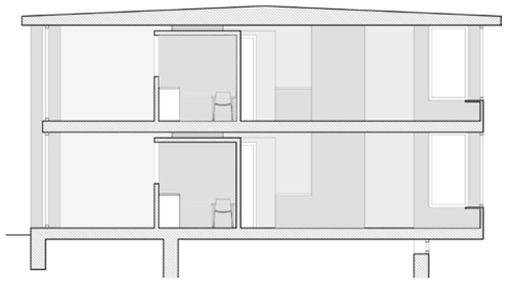
HOMES FOR SENIOR CITIZEN

1993, CHUR, SWITZERLAND

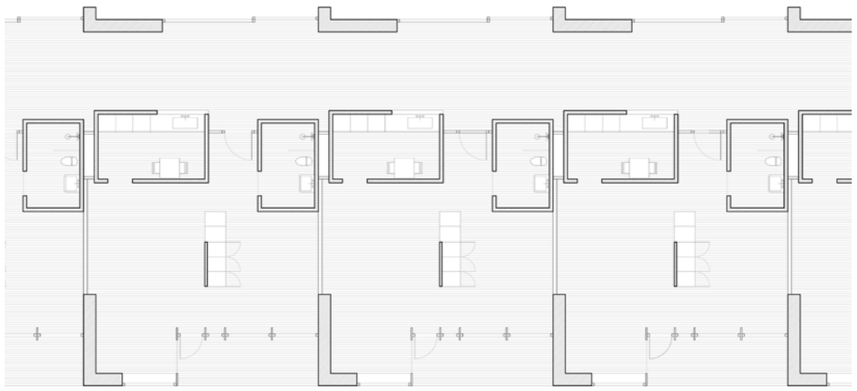
Homes for senior citizen houses 21 smaller apartments, all the apartments are connected to a corridor along the façade. The interior is decorated with exposed concrete, tufa, and Larchwood. Zumthor´s vision of this project was to make it informal and relaxed, a place where elderly people can rest. Functions such as the kitchenet and the bathroom to each apartment are placed in freestanding volumes that are emphasized from the corridor. (Atlas of spaces, 2019).

We want to refer to this project because of how Zumthor works with the interior perception of space. He chooses to emphasize freestanding volumes in the interior space by adding a shadow gap. The shadow gap separates the volume from the ceiling, giving the illusion of a freestanding object. We find this approach on how to emphasize volumes and objects in the interior space interesting and something that can add to the heaviness we are searching for.

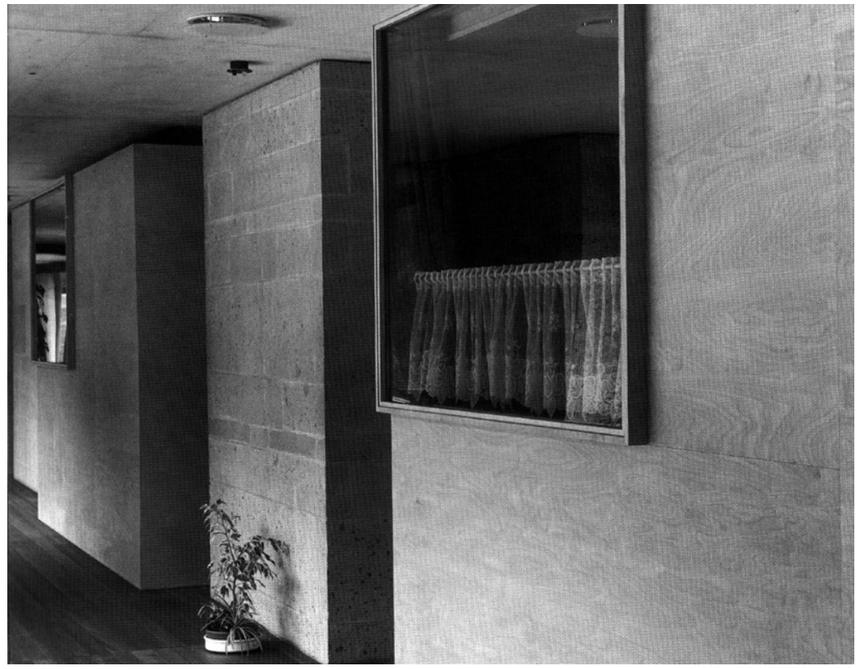
SECTON



FLOORPLAN



Photograph of the interior (Binet, 1998)



Photograph of the interior (Binet, 1998)

DETAILS & STRUCTURE

6. PETER ZUMTHOR

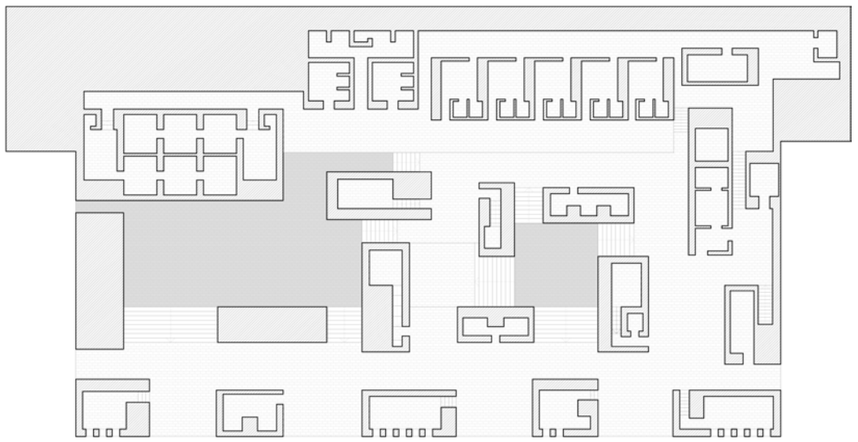
THERME VALS

1996, VALS, SWITZERLAND

Therme Vals is a luxury hotel and spa retreat located in the Switzerland alps. The building is well integrated in the landscape and is sitting on a slope almost invisible from the outside. The construction material is exposed both in the interior and on the exterior of the building. The floorplan consists of seemingly randomly placed volumes that defines the interior space, the concept was to create a feeling of walking within a forest Zumthor describes (Archdaily, 2009). These volumes contain different functions such as toilets, pools, saunas, etc.

What makes this project worth referring to is the concept of the freestanding volume within a space. Zumthor plays with the idea of a freestanding volume that defines the interior space. Here these volumes are large and big in scale, almost that big that they turn into wall elements of a bigger structure and not as a freestanding volume. The freestanding volumes however creates unique spaces in between them and the space of Therme Vals could be looked upon as one large space, divided by blocks which creates interesting paths to walk. This project expresses a heaviness in many ways, but we are most interested in the large scale of the freestanding volume.

FLOORPLAN



Photograph of the interior (Varady, 2016)

Photograph of the interior (Varady, 2016)

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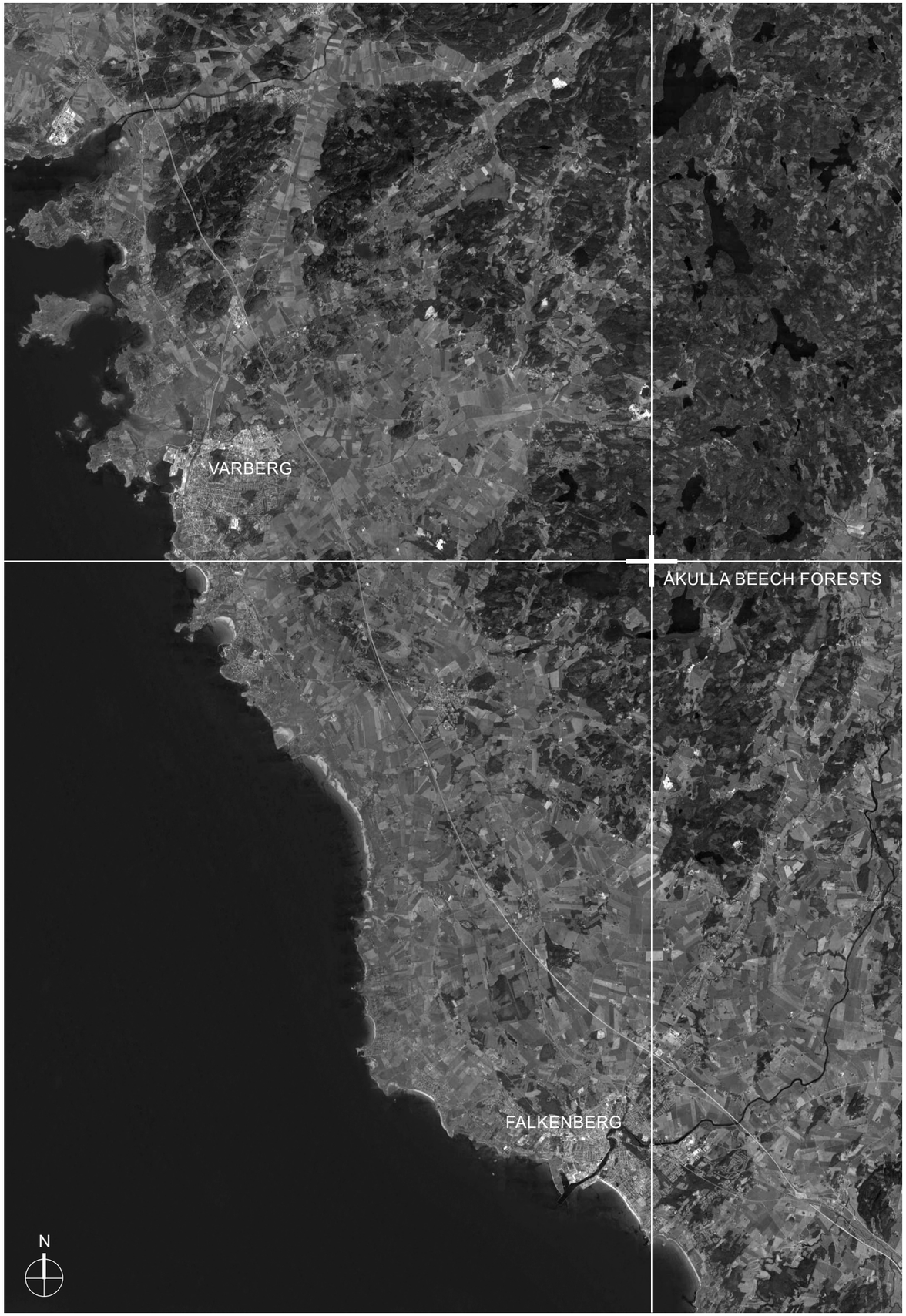
3. THE SITE & PROGRAM

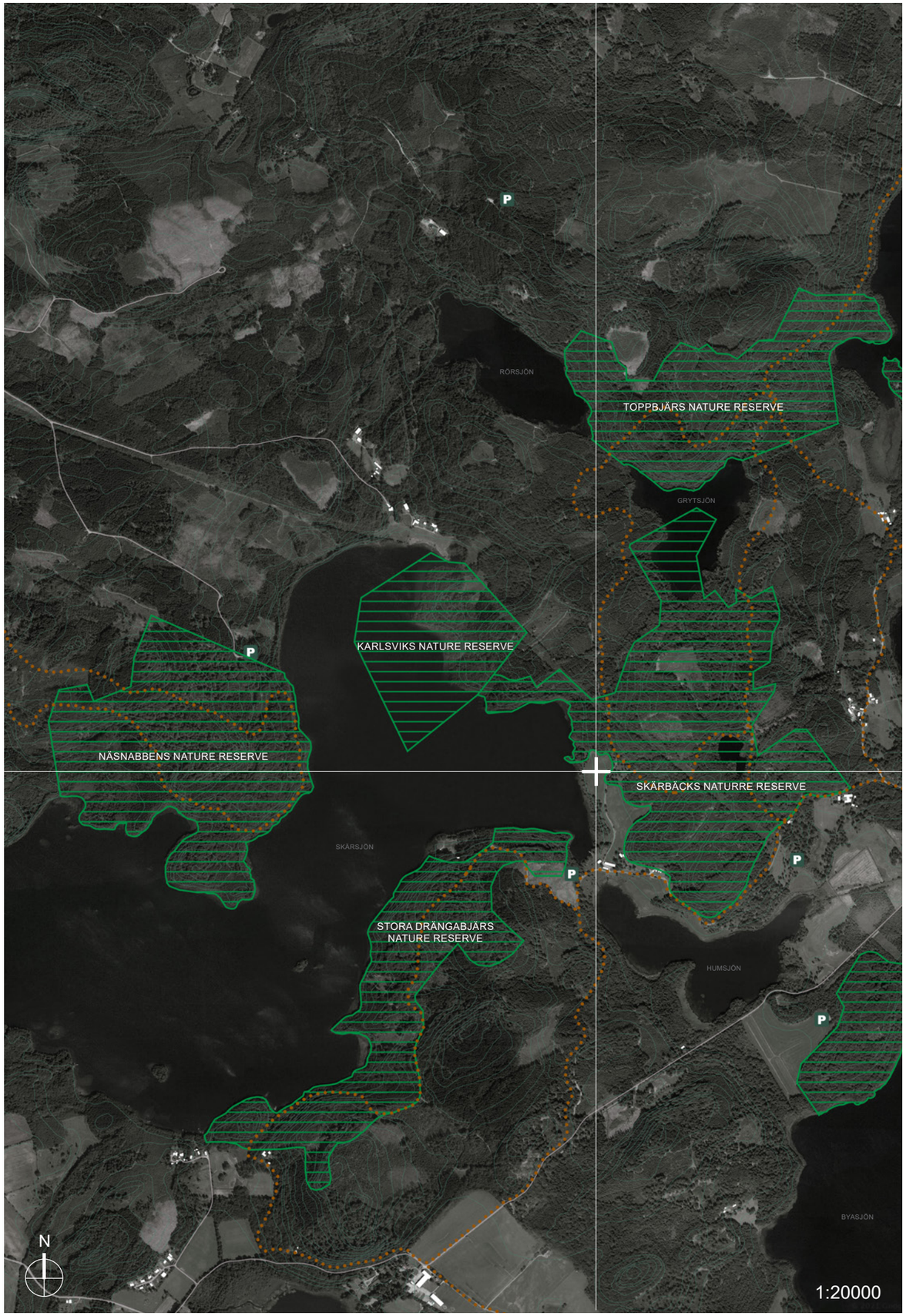


ÅKULLA BEECH FORESTS

The district Åkulla beech forests is a collective of nature reserves in the south of Sweden, between Varberg to the north and Falkenberg to the south. The district is fifty square kilometers big and consists of twelve individual reserves. The majority of the district was classified as a nature reserve back in 1970´s in order to protect the old forests. These forests have been standing on this location for more than thousand years.The Landscape in the district is made of rocky slopes, gullies and lakes, twenty percent of the district consist of lakes. The district is an attractive place to visit and provides lots of different activities, both in the winter as in the summer. It provides accomodation, places to eat, outdoor activities, and museums to visit. Some common winter activities are ice-skating and cross-country skiing, along with hiking. During the summer you can go fishing, hiking, bike-riding amongst other things (Åkulla bokskogar). The district have twelve major hiking paths and a total distance of 66 kilometers to walk (Länstyrelsen)

We have chosen this district for our design proposal because it is easy to access from the cities on the west coast of Sweden, it's a popular nature reserve to visit, and we see potential for further development. The district is nevertheless beautiful and offers high hills with beautiful views over the lakes.

Photographs from the nature reserve Skärbäck (Authors own copywright)



BED & BOX RETREAT

For our specific plot we have chosen an already existing open green area surrounded by forest and with a direct contact to the nature reserve Skärbäck. The plot offers a grand view of the lake Skärsjön and is part of an already existing farm, our design proposal will therefore be an addition to this farm. The existing farm will be incorporated into our design proposal and work as the owners house and office to our addition. Our design proposal is a Bed & Box retreat, consisting of a guesthouse and two stables.

The Bed & Box retreat is a relatively new concept of a hostel in Sweden. When staying at the retreat its visitors can either bring their own horse with them or rent a horse upon arrival. The Bed & Box offers a vacation close together with your own horse or horses in general. During the stay at the Bed & Box, people live close to their horses and spend time with them in a beautiful setting of nature.

View over the lake Skärsjön (authors own copywirght)

PROGRAM - BED & BOX

EXISTING FARM	QUANTITY	SQM (m^2)	TOTAL
- LIVING SPACE FOR OWNER	1	120	120
- OFFICE	1	50	50
- STORAGE	10	10	100
- PARKING	15	12	180
- GARAGE	6	15	90
- HORSE BOX	8	8	64
- WASTE ROOM	1	10	10

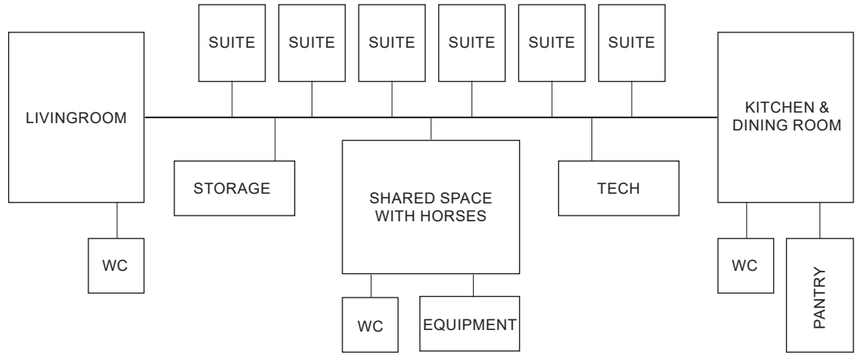
STABLE

- HORSE BOX	12	10	120
- STORAGE	3	50/8	62
- HAY STORAGE	1	50	50
- TECH	2	8	16
- WORKSHOP	1	50	50
- DRYING ROOM	2	8	16
- LAUNDRY	2	8	16

GUESTHOUSE

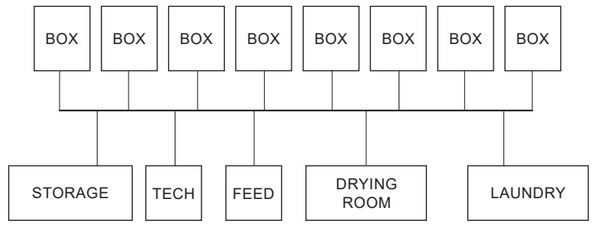
COMMON AREAS			
- KITCHEN & DINING ROOM	1	89	89
- PANTRY	1	4	4
- LIVINGROOM	1	89	89
- WC	3	4	12
- STORAGE	7	3-8	19
- TECH	1	8	8
- SHARED SPACE WITH HORSES	1	77	77
- EQUIPMENT	4	4	16
PRIVATE SPACE			
- SUITES	6	28	168
- CLOSET	6	1	6
- BATHROOM	6	4	24
- TERRACE	6	9	54
- EQUIPMENT STORAGE	3	4	12

GUESTHOUSE SPACE PROGRAM

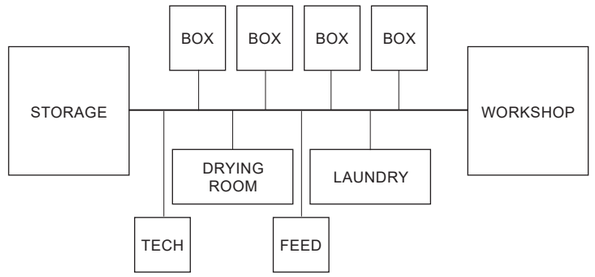


STABLE SPACE PROGRAM

STABLE 1



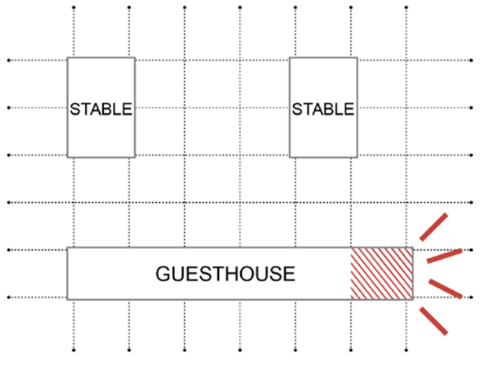
STABLE 2



4. DESIGN PROPOSAL

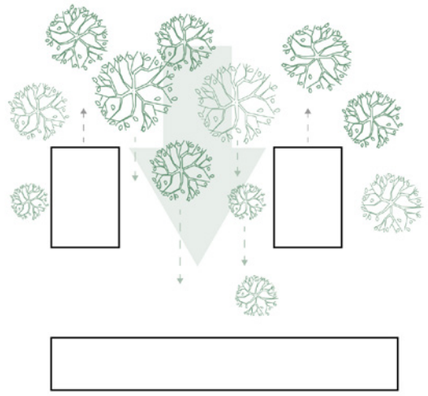
DESIGN STRATEGIES

The BED & BOX facility is organized similar as a typical farm. The two stable and the guesthouse together form a protected courtyard. To utilise the unique location we have worked with four design strategies. Below you can follow the process step by step.



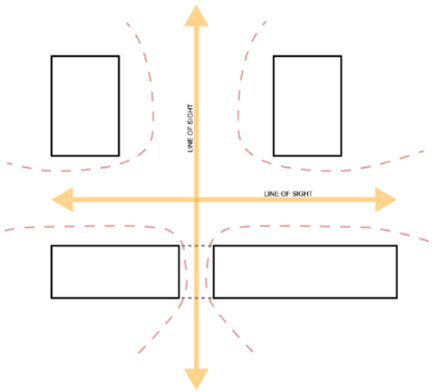
1. STRUCTURE

Our proposal follows a strict grid which is visible in the structure of the buildings. The grid allows the guesthouse to mark the entrance to the courtyard and welcomes the guests with a glow from the interior.



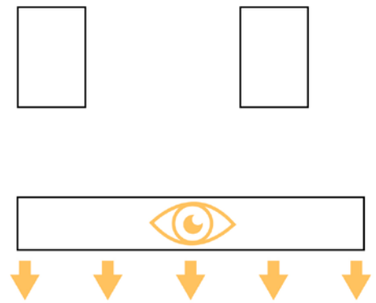
2. NATURE

Our proposal opens up between the two stables and lets in the vegetation from the nature´s reserve forest above. The courtyard is simple in the design, the brought in trees and nature together with the buildings define the spaces.



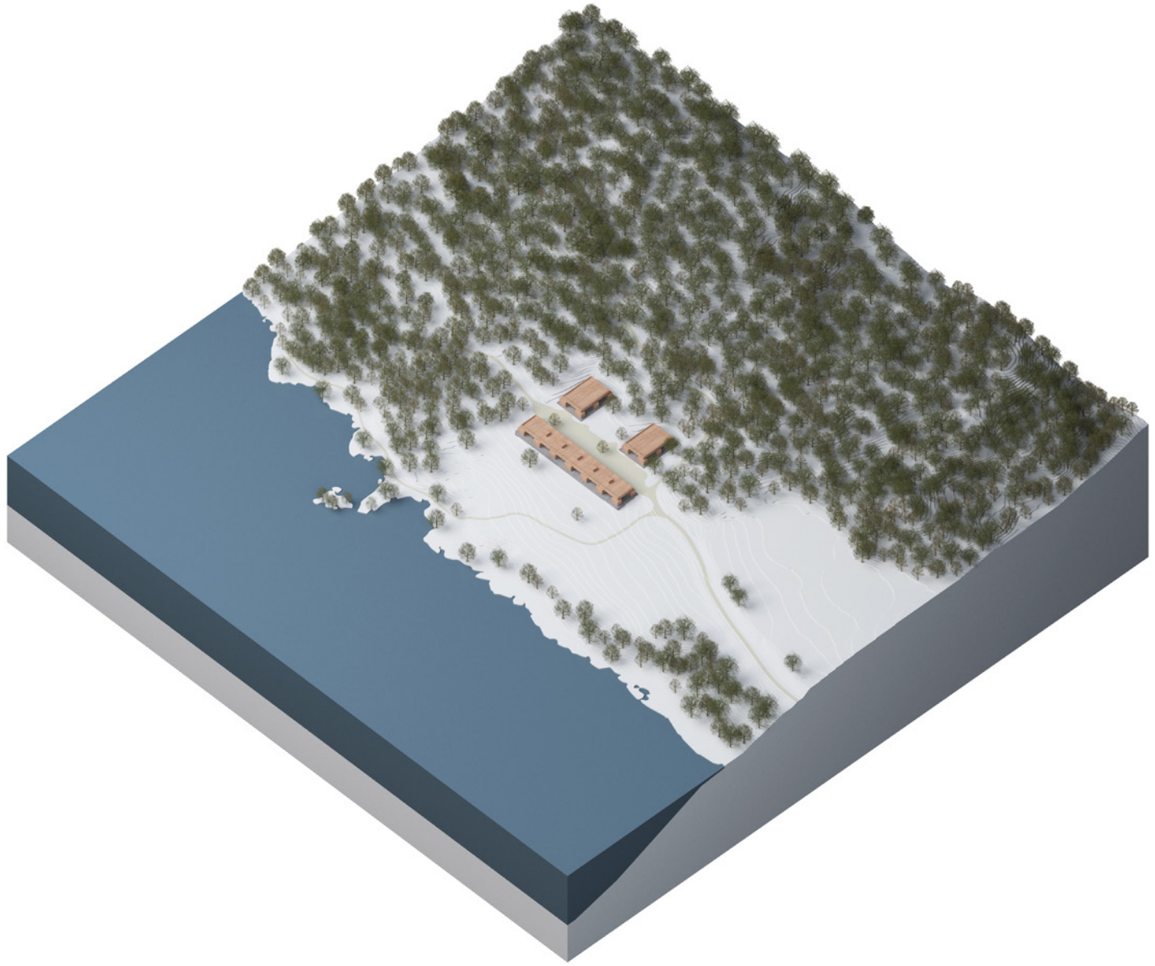
3. PASSAGE

A line of sight is added through the guesthouse in order to connect the paddock infront of the guesthouse with the courtyard.



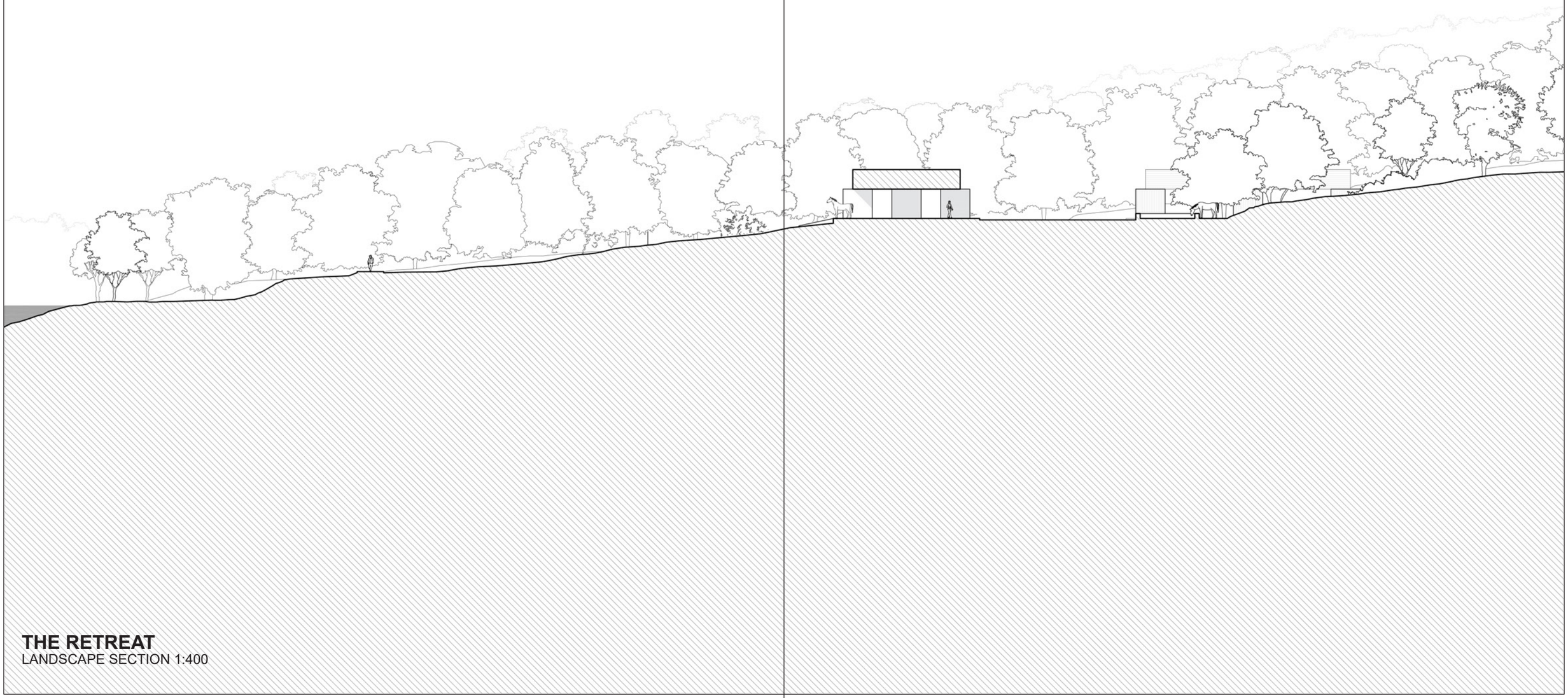
4. VIEW

The guesthouse is positioned and organized so that all the social and private spaces will face the view towards the lake and the sunset.

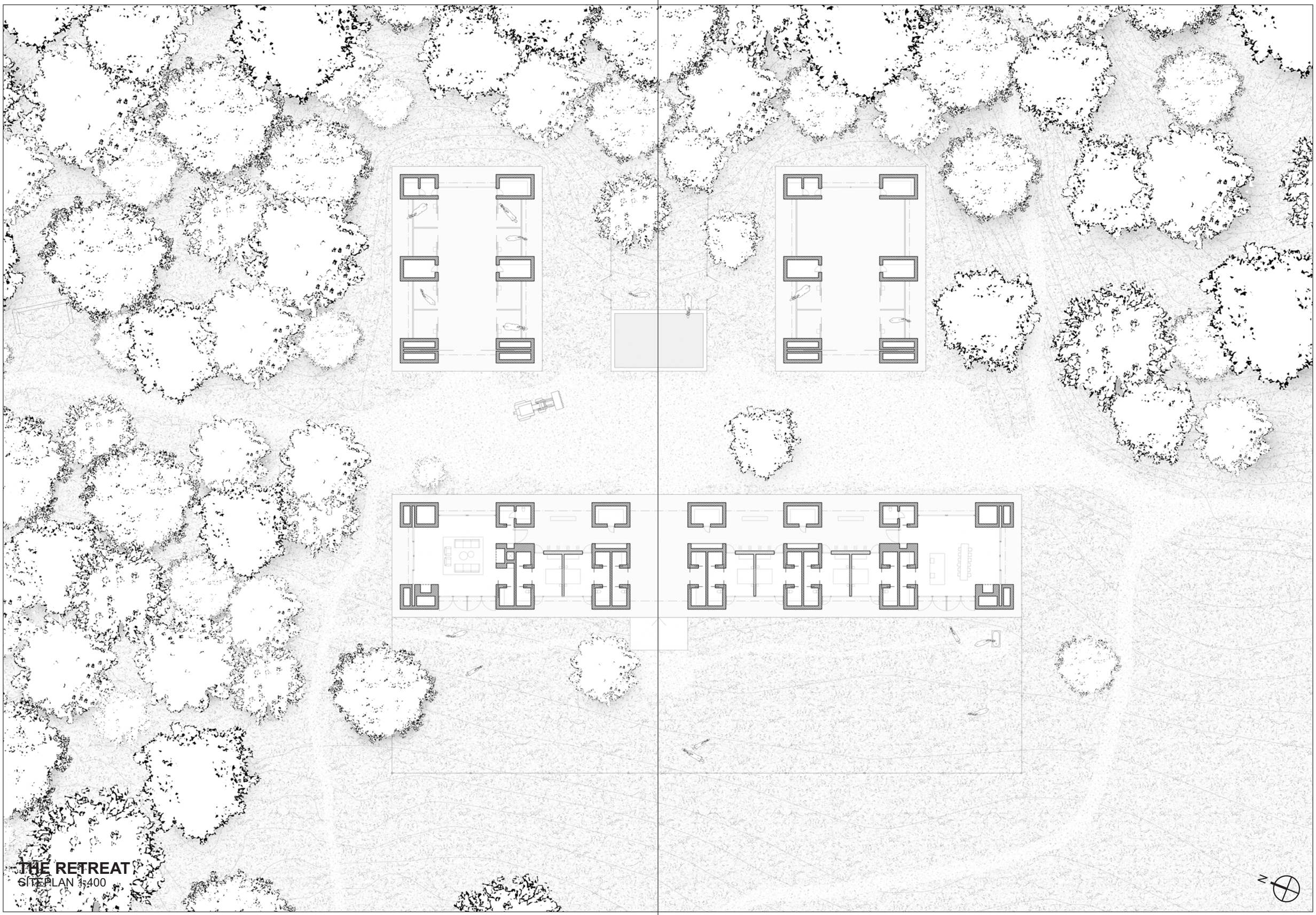


Digital landscape model

Digital landscape model

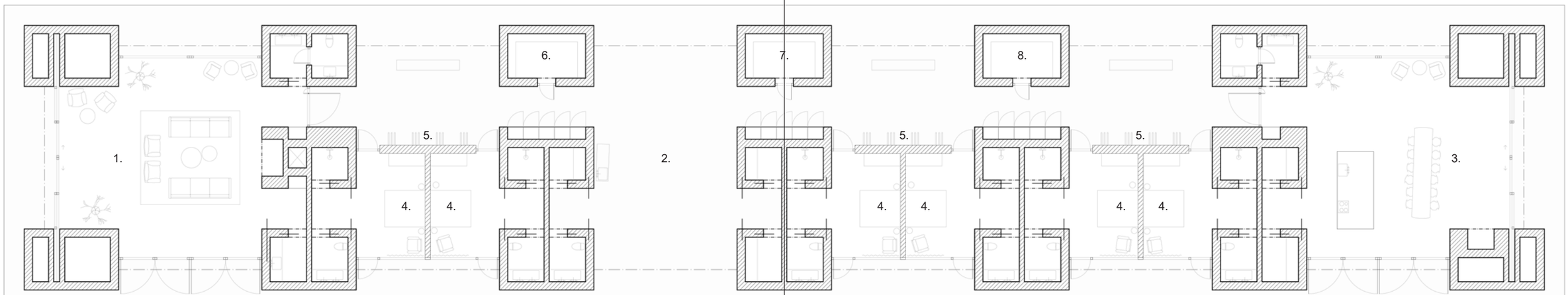


THE RETREAT
LANDSCAPE SECTION 1:400



THE RETREAT
SITEPLAN 1:400

N

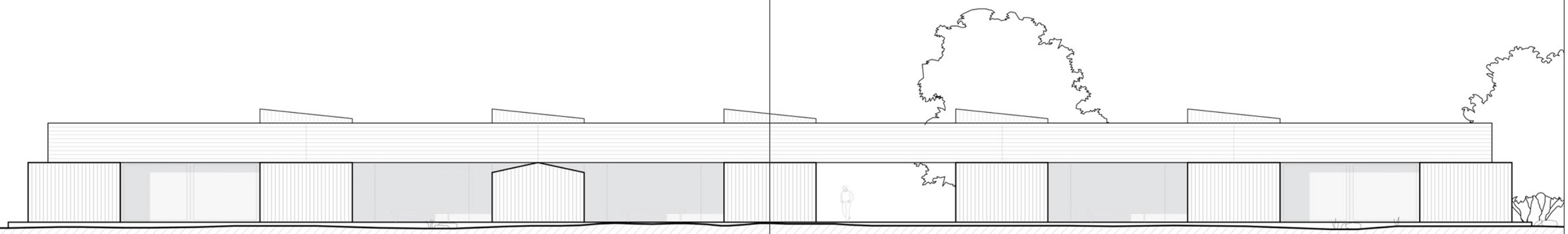


THE GUESTHOUSE

FLOORPLAN 1:200

1. LIVINGROOM
2. SHARED SPACE WITH HORSES
3. KITCHEN AND DINING ROOM
4. SUITE
5. EQUIPMENT WALL
6. TECH
7. LINEN STORAGE
8. WASTE ROOM

THE GUESTHOUSE
FACADE WEST 1:200



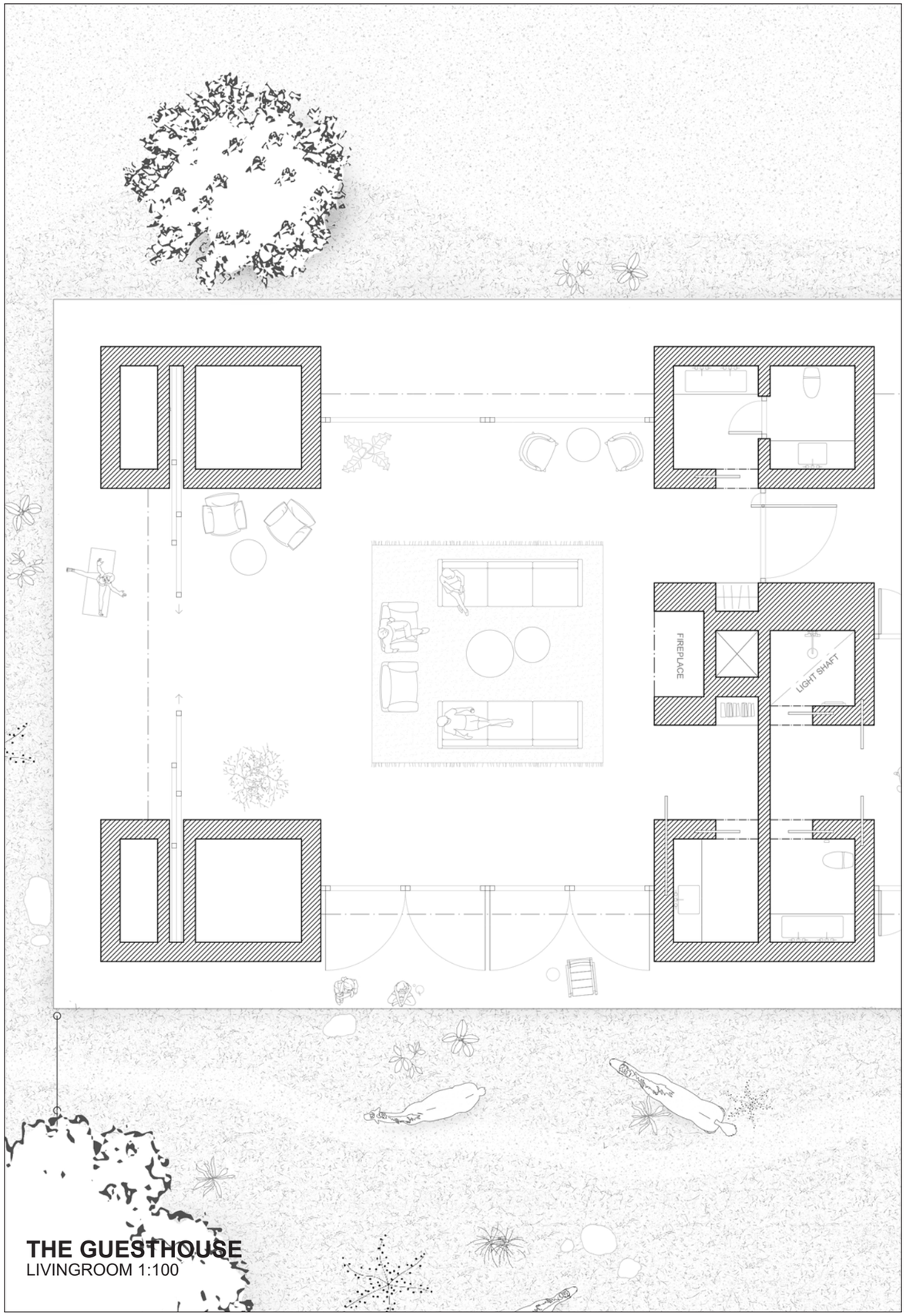
THE GUESTHOUSE
FACADE EAST 1:200

View from the lake

View over the arcade pillars

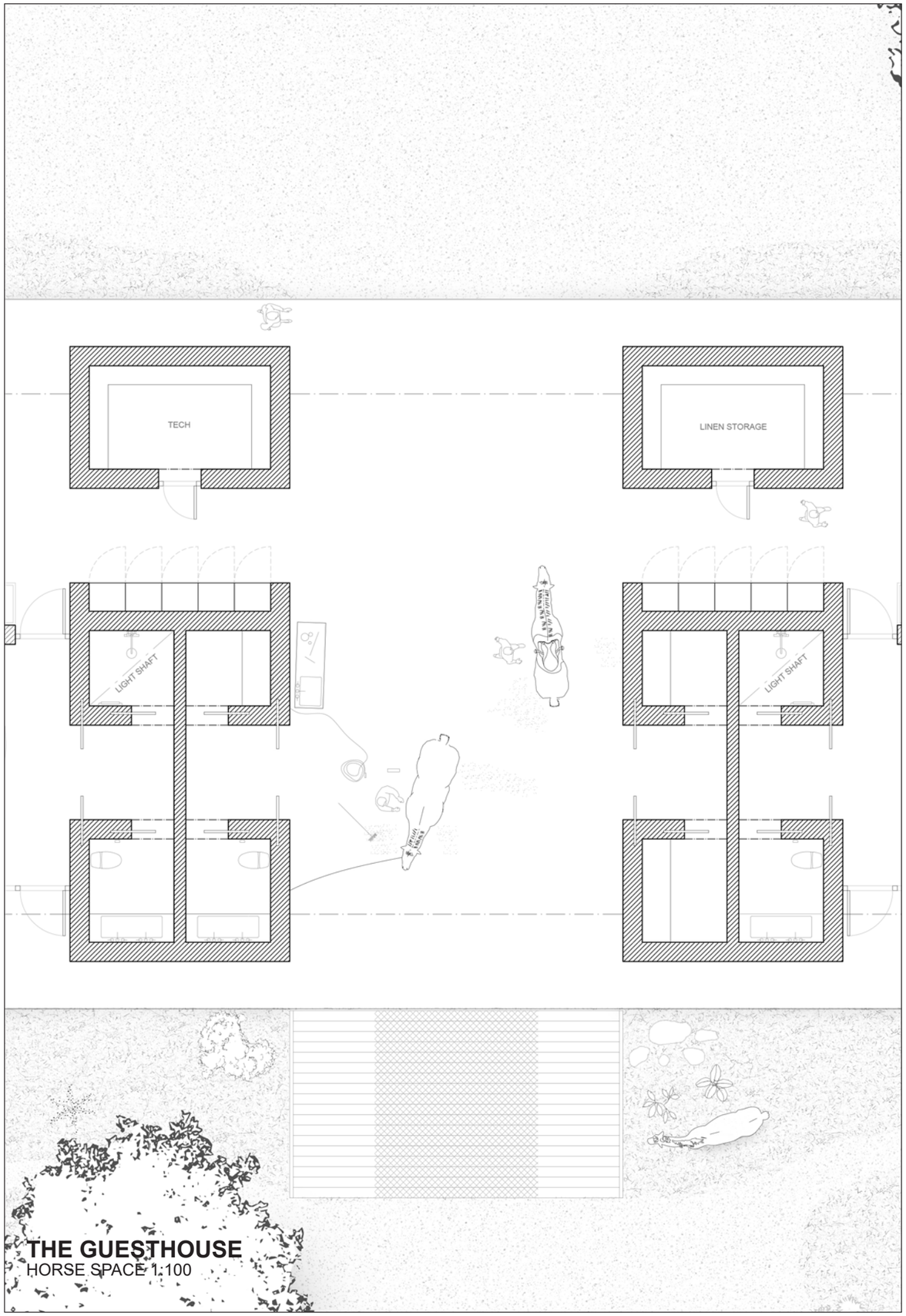
VIew over the kitchen exterior

View from the courtyard

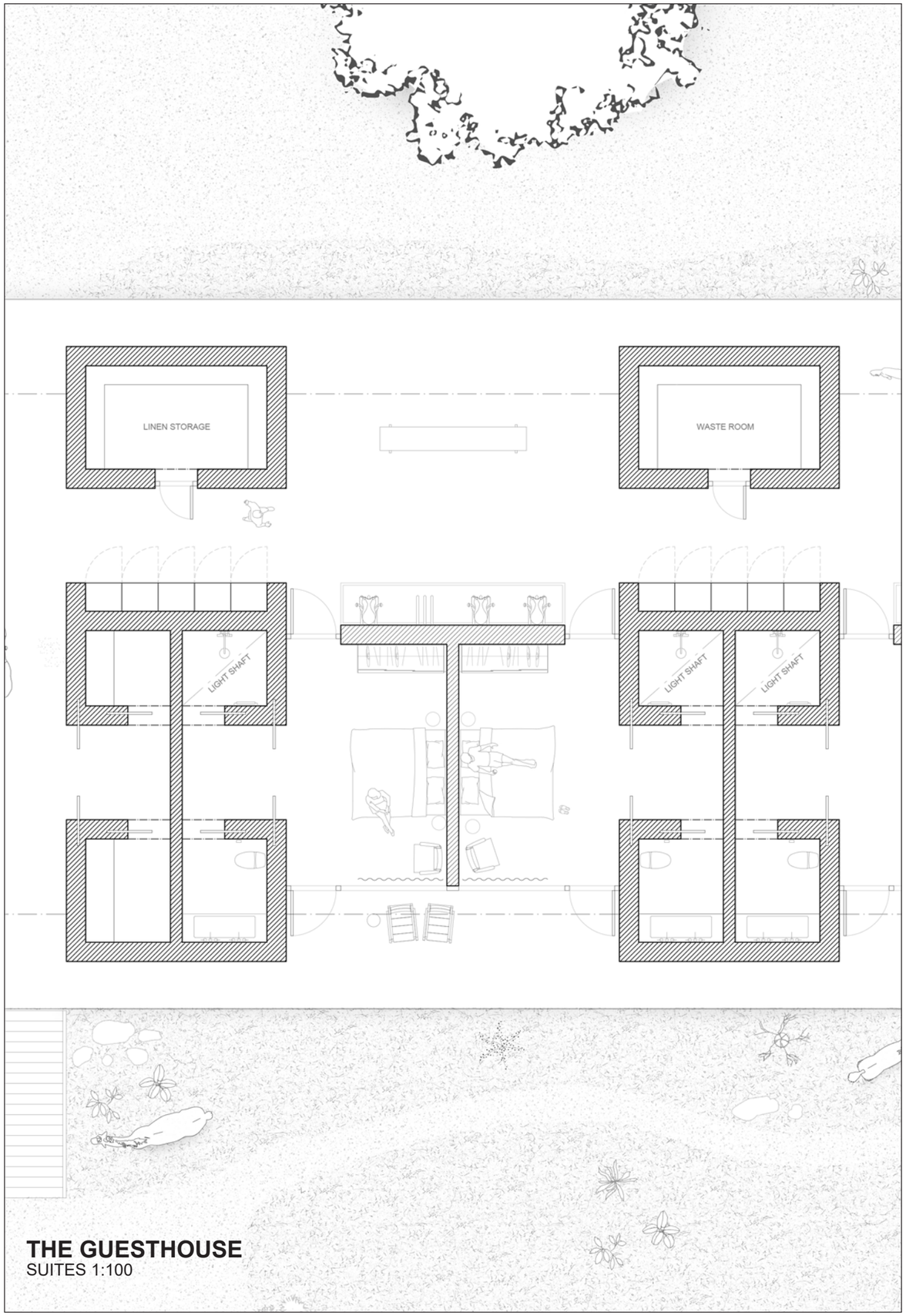


THE GUESTHOUSE
LIVINGROOM 1:100

View over the livingroom

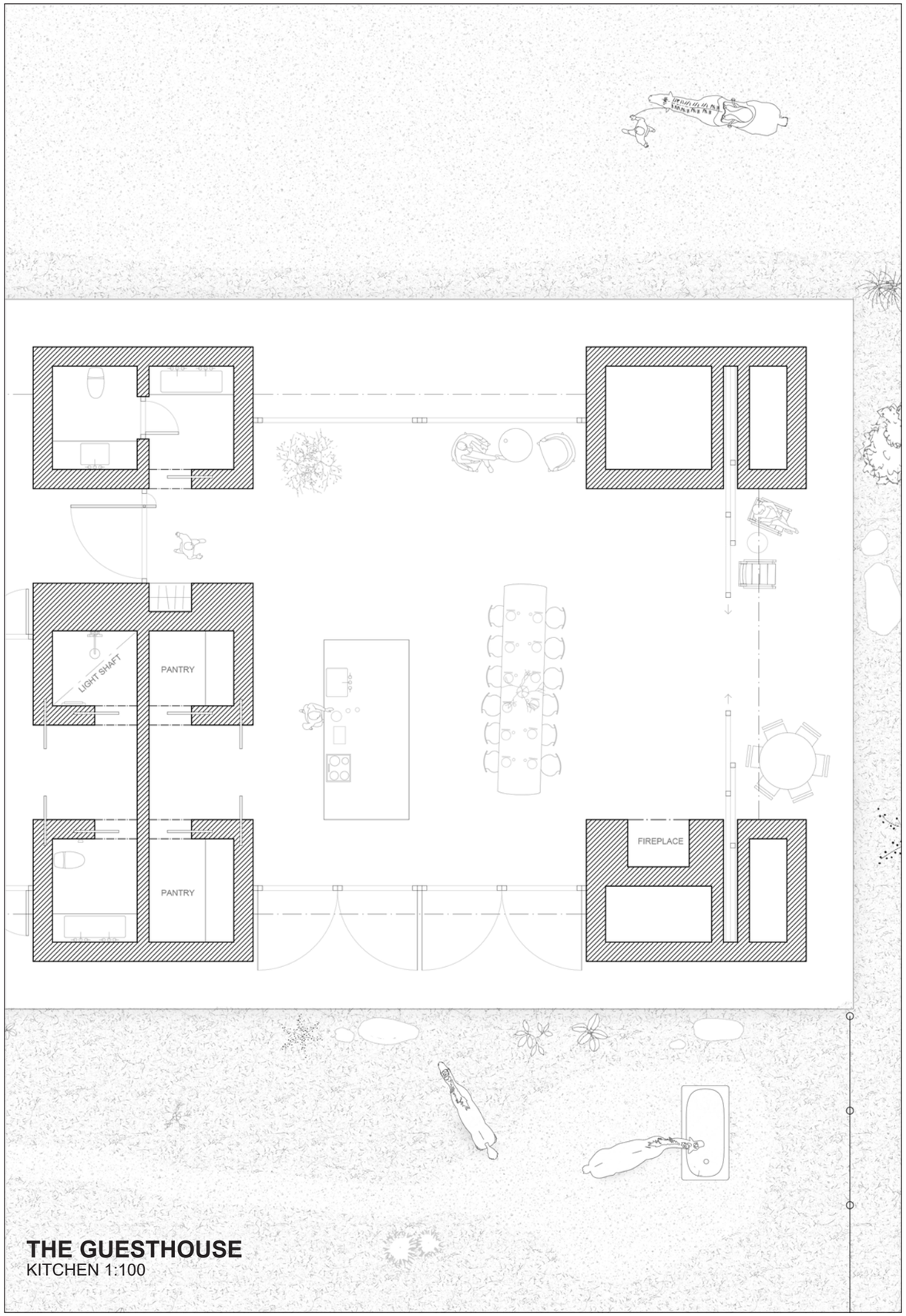


View from the shared space with horses



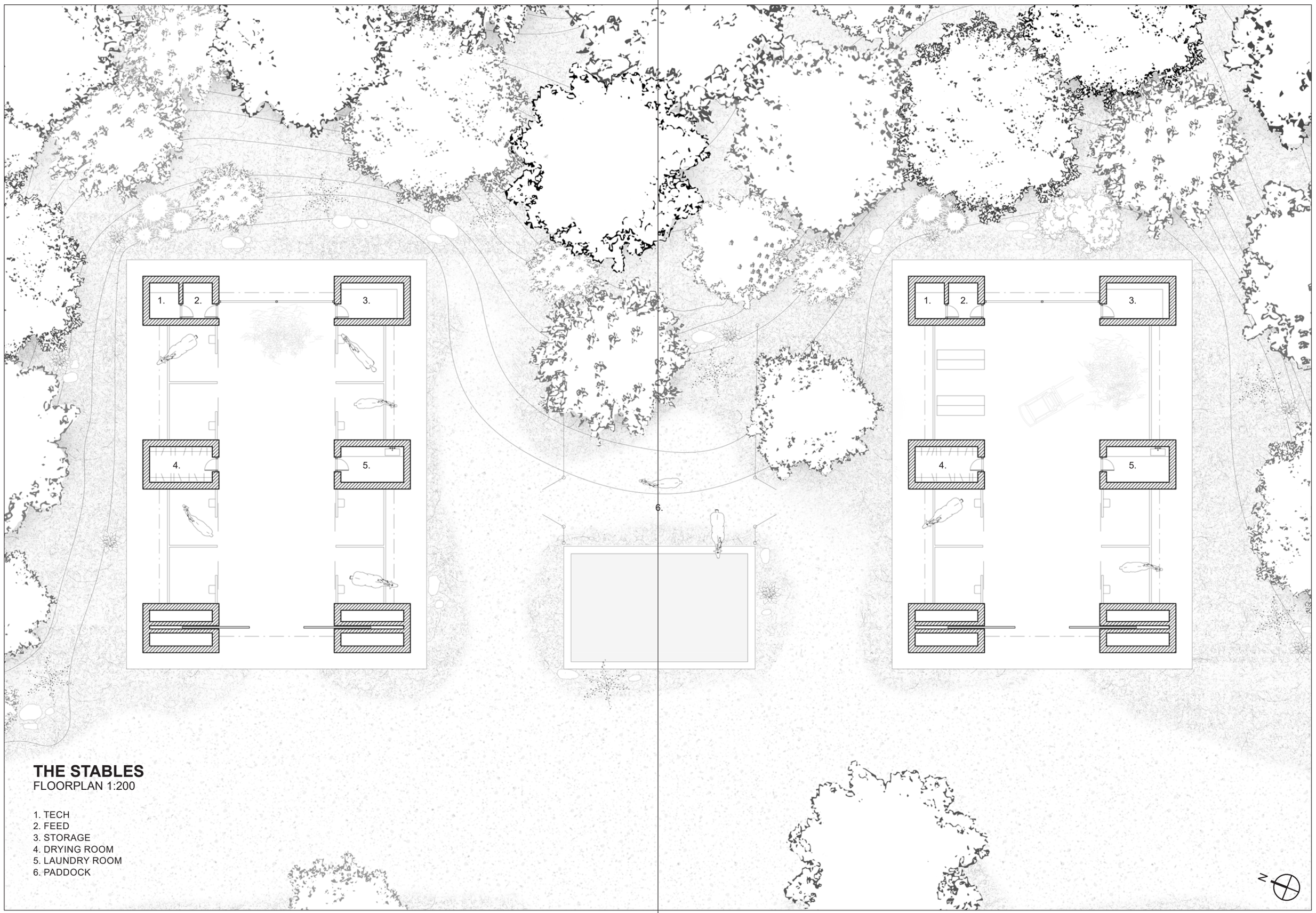
THE GUESTHOUSE
SUITES 1:100

View from the suite



THE GUESTHOUSE
KITCHEN 1:100

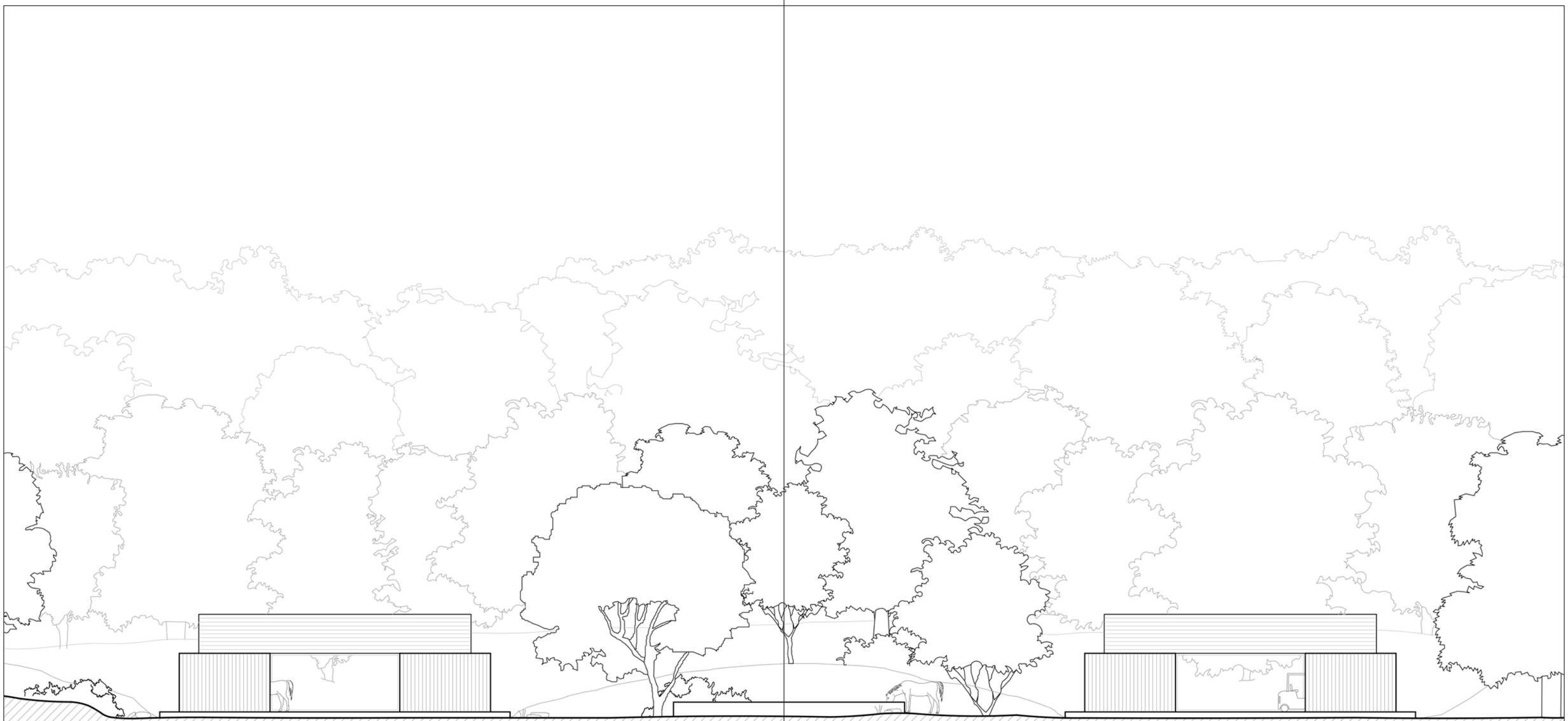
View over the kitchen



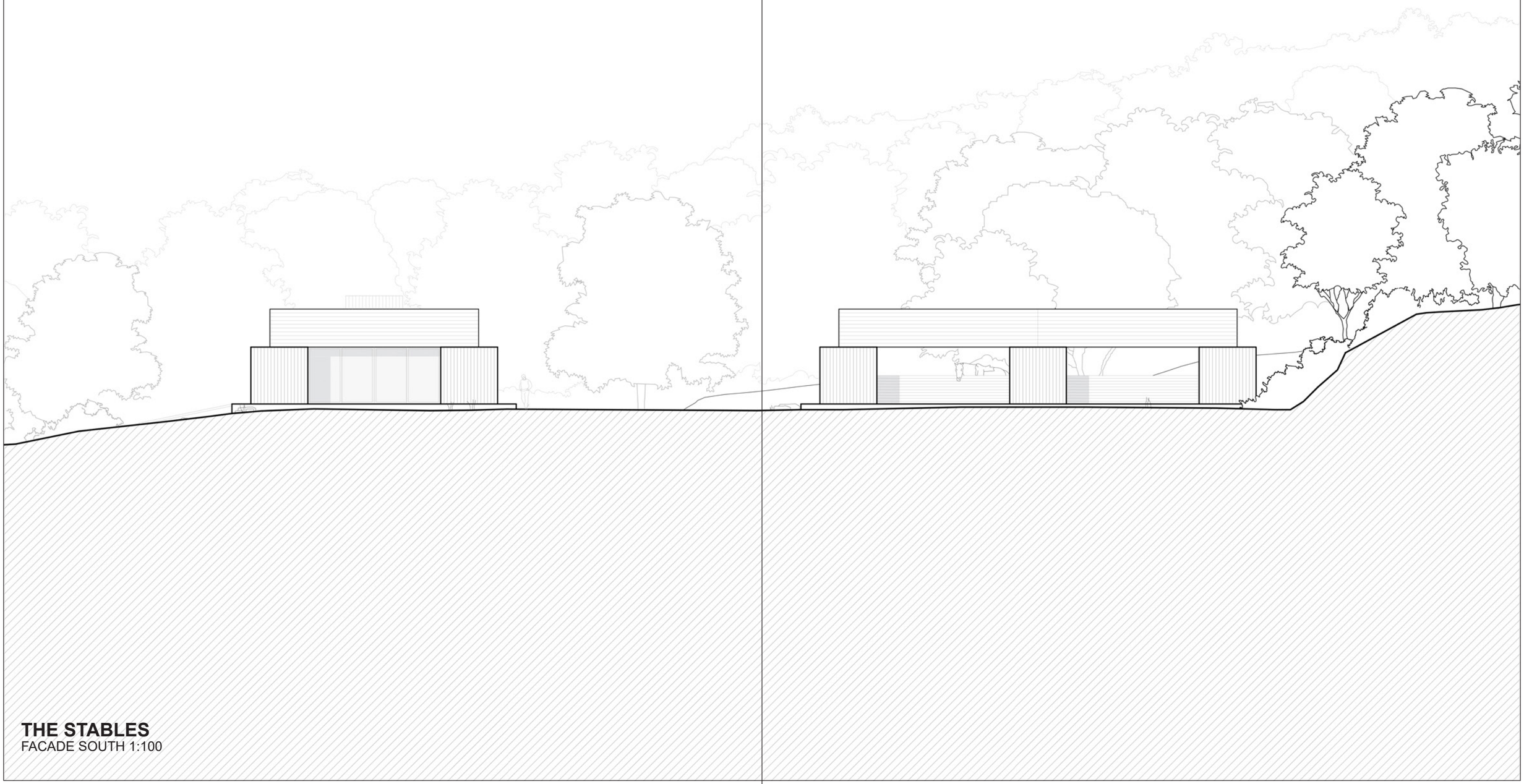
THE STABLES

FLOORPLAN 1:200

1. TECH
2. FEED
3. STORAGE
4. DRYING ROOM
5. LAUNDRY ROOM
6. PADDOCK



THE STABLES
FACADE WEST 1:100

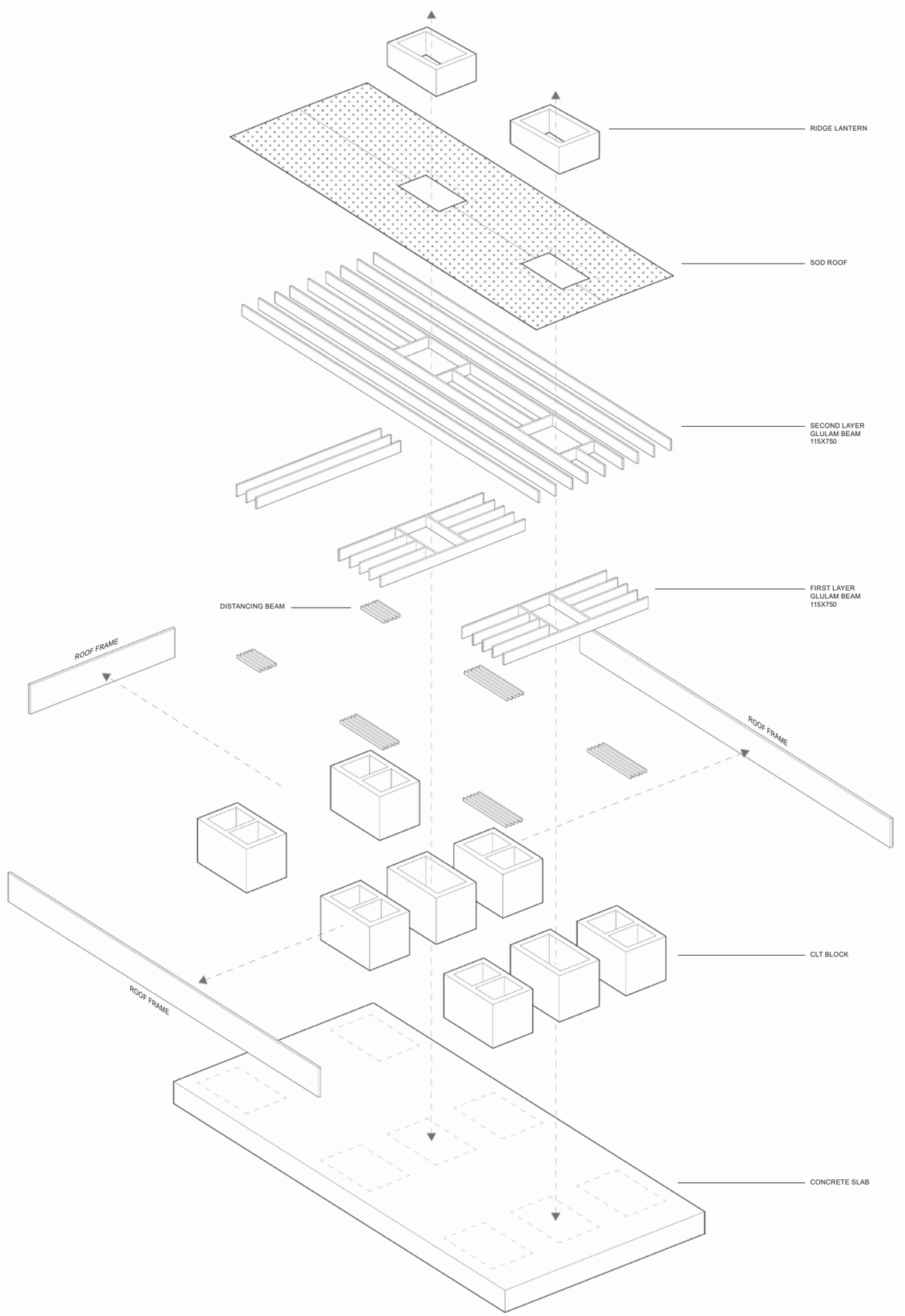


THE STABLES
FACADE SOUTH 1:100

View over the stable exterior

View from the stable

5. DETAILS


RIDGE LANTERN
SOD ROOF
SECOND LAYER
GLULAM BEAM
115X750
FIRST LAYER
GLULAM BEAM
115X750
DISTANCING BEAM
ROOF FRAME
ROOF FRAME
ROOF FRAME
CLT BLOCK
CONCRETE SLAB

TECH

LINEN STORAGE

SKYLIGHT

SKYLIGHT

SKYLIGHT

SKYLIGHT

↑ MIRROR WALL ↓

↑ MIRROR WALL ↓

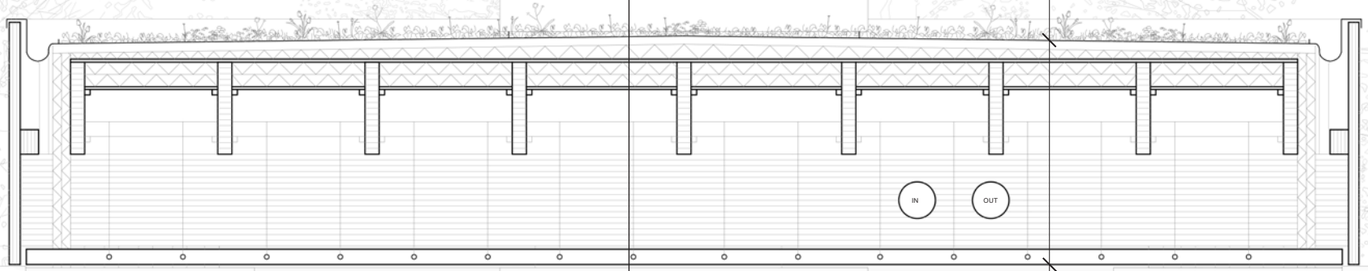
↑ MIRROR WALL ↓

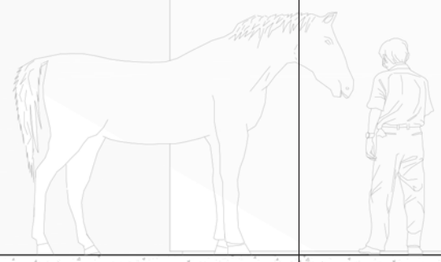
↑ MIRROR WALL ↓

DETAIL 4

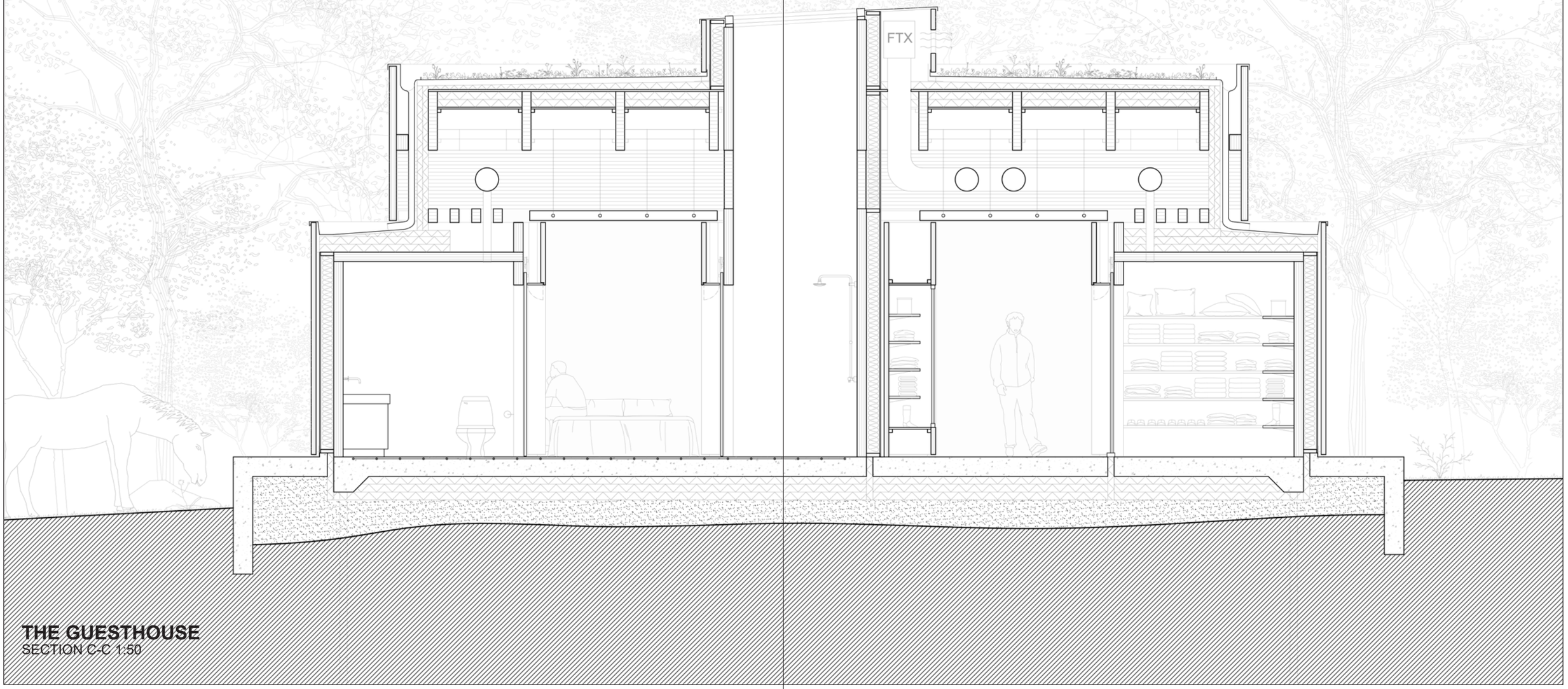
THE GUESTHOUSE
FLOORPLAN 1:50

SEDUM	50
INSULATION	70
TONGUED & GROOVED BOARD	25
VAPOUR BARRIER	1
GLULAM BEAM	750x115
ROOF INSULATION	200
OSB	22
GLULAM BEAM	750x115
FALSE CEILING	125

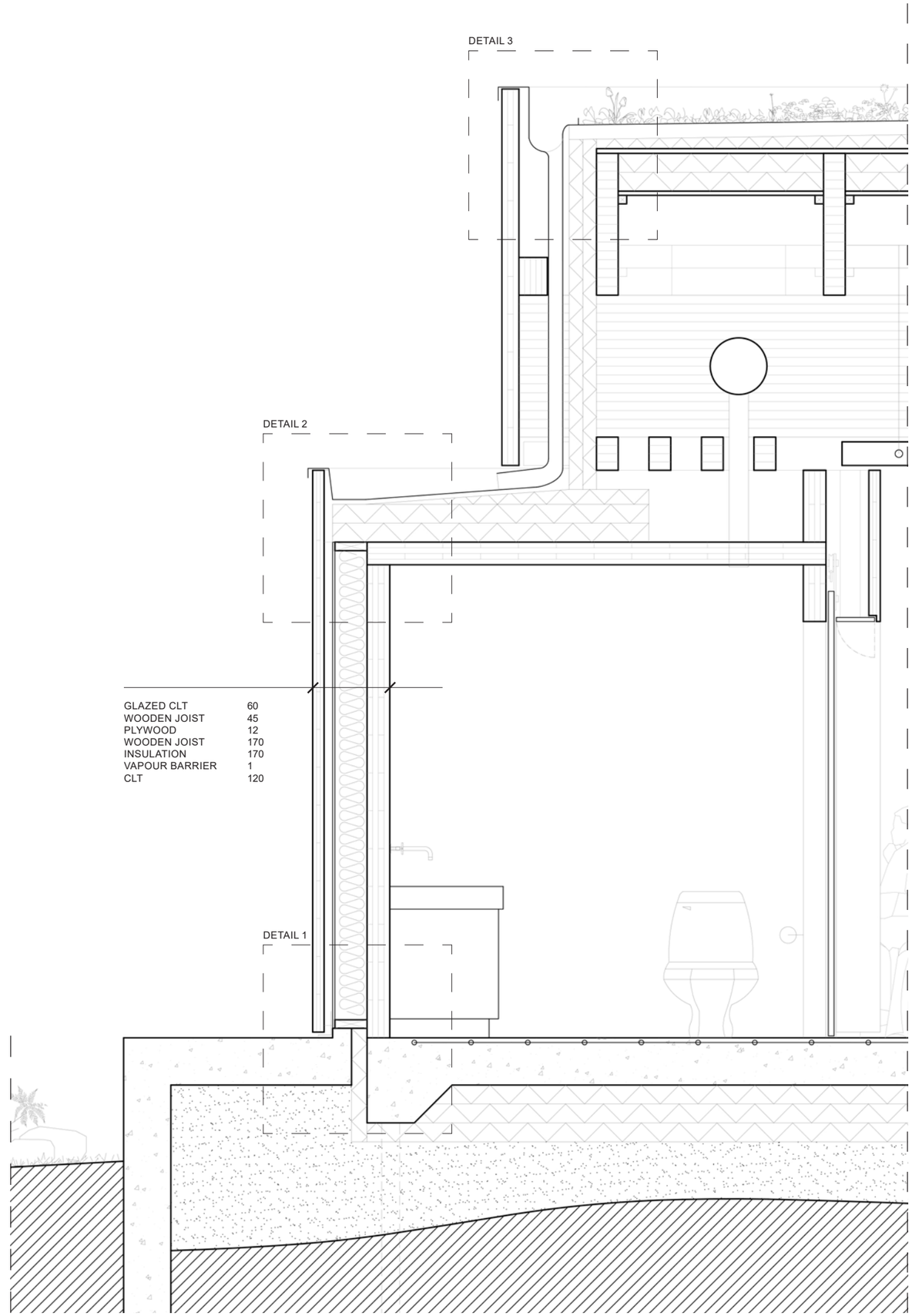


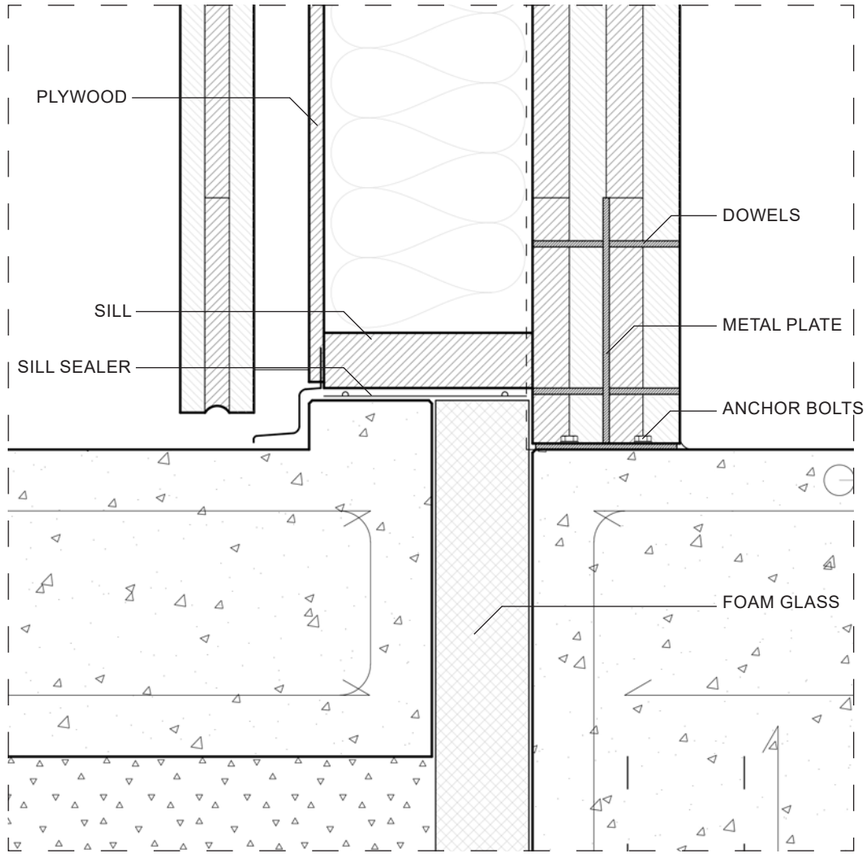


THE GUESTHOUSE
SECTION B-B 1:50

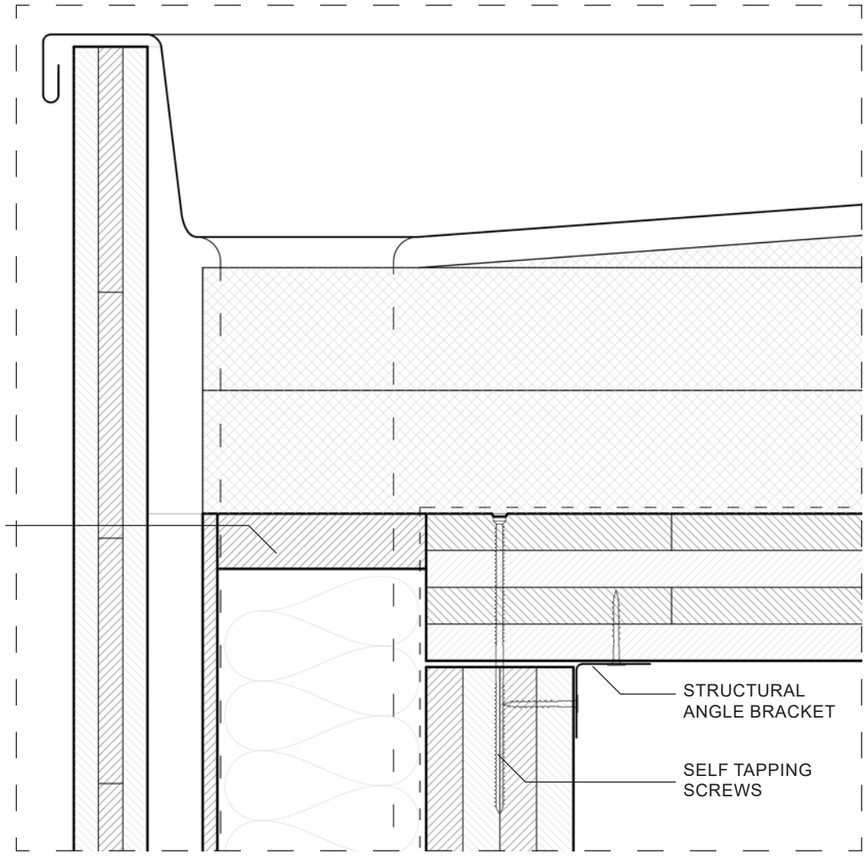


THE GUESTHOUSE
SECTION C-C 1:50

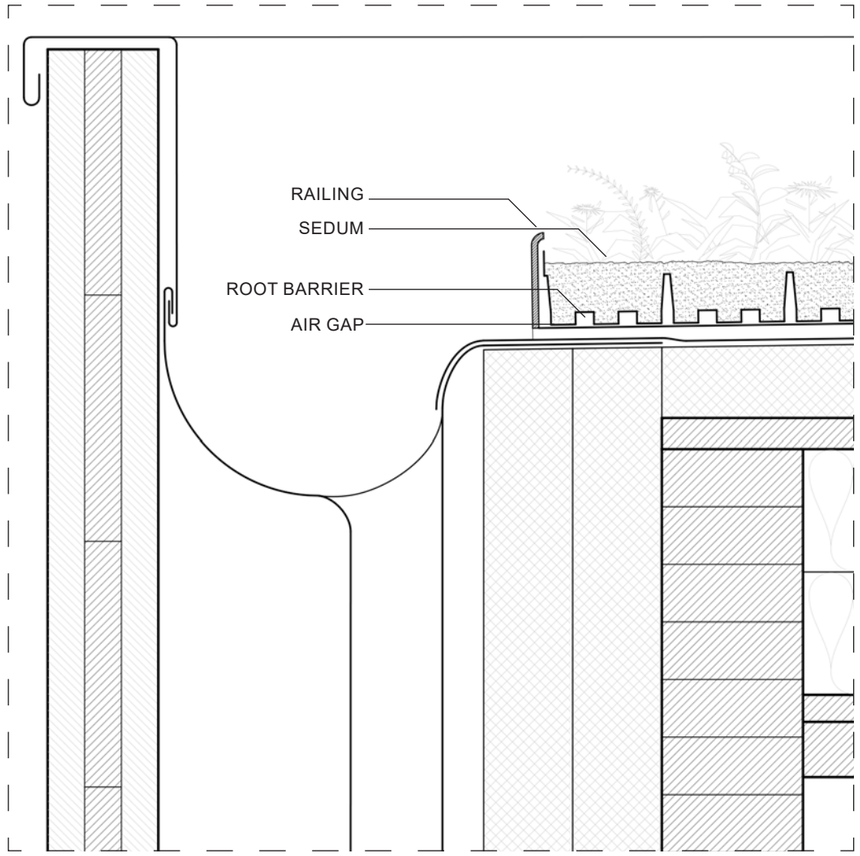

DETAIL 3
DETAIL 2
DETAIL 1
GLAZED CLT 60
WOODEN JOIST 45
PLYWOOD 12
WOODEN JOIST 170
INSULATION 170
VAPOUR BARRIER 1
CLT 120



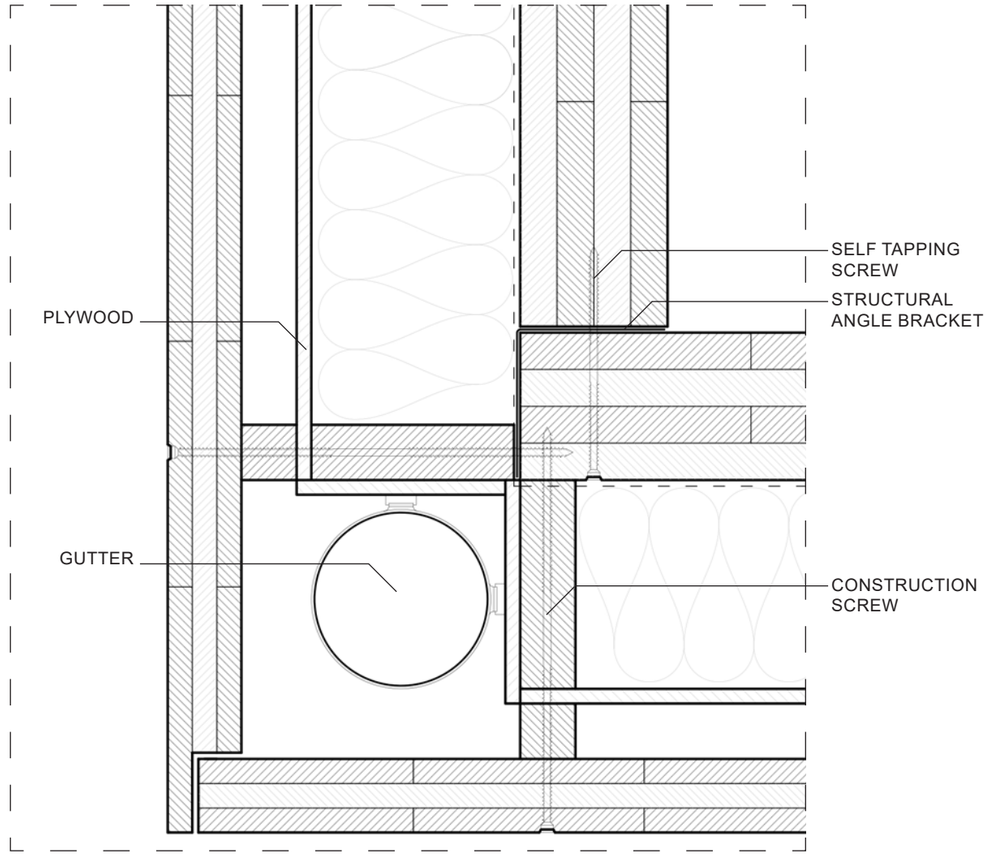
VERTICAL DETAIL 1
1:5



VERTICAL DETAIL 2
1:5



VERTICAL DETAIL 3
1:5



VERTICAL DETAIL 4
1:5

REFLECTION

SUMMARY

Our thesis started off with a fascination about a specific heavy expression we found when we looked at and discussed brutalist architecture. We wanted to get a deeper understanding of what this specific heavy expression meant for us and how we could achieve the same look in our architecture. We came to refer to this heavy expression as heaviness and our quest to achieve it began last semester when we conducted a research project about what key factors matters when trying to achieve a heaviness in the expression of a structure. Our thesis is a further development on that project where we also wanted to add sustainability to the discussion of heaviness. All the former projects and buildings we were looking at for inspiration, are constructed with heavy- not sustainable materials in our opinion. We wanted to see if we could replace the often-used heavy materials with wood instead but still achieve the heaviness we were aiming for. Our thesis therefore also adds to the discussion of how a wooden building is built in Sweden and what it may express. When looking at contemporary wooden buildings we often saw a light expression in the building and we thought that it would be interesting to propose the opposite to what we typically see, the expression of heaviness with a wooden building.

DISCUSSION

We decided early that our focus will be to achieve the aesthetics of heaviness before anything else. This meant that when we were faced with decisions throughout the design process, we always prioritized the expression of heaviness over other more practical aspects such as economy, material efficiency, etc. This principle of course had its limit because at the same time we wanted to make a realistic project, finding that balance was a challenge.

When conducting our model studies in the search of heaviness we realized that big dimensions of the building components are crucial to achieving a heaviness. Large amounts of our research work have been to find strategies and ways to motivate our big dimensions. For example, this led to that a standard oversized pillar in the first step, transformed later into a pillar-block with a function inside it. This way we got the perception of a pillar in the building composition, but in the floorplan, it is a freestanding volume containing a function from the program. We found this approach interesting and continued our research through model studies on how we could maximize the illusion of large-scale pillar blocks standing as freestanding volumes with help from mirrors. We learned that to experience the heaviness, we needed to highlight these freestanding volumes and at the same time reduce the number of components that make up the composition. The floorplan structure offers space in between these volumes that are of necessity to at all experience it. We found our model studies to bring us the understanding we searched for, and we think that physical models are a great tool to understand these types of explorations.

When it comes to our research questions, we have mostly worked with our first two questions about heaviness. Our sub-questions in our thesis have not been prioritized since we found it more interesting to stay in the research about heaviness. The aspect of horses in our design proposal is of course taken into consideration but is not what has driven the design. The horses are always present in our design proposal and contribute to the experience of the place and their presence is crucial but what it more precisely adds will be something we will investigate in another project.

CONCLUSION

Overall, we are happy with the result and we think that our research broadens our design thinking. When you are aiming for a certain expression in a design proposal you are faced with lots of problems to solve towards achieving this. It can be hard to stay true to the expected result. We believe that the knowledge we gained on how to achieve a heaviness can be implemented on other types of expressions as well. Heaviness is only one of the unlimited types of expression in architecture and we feel comfortable addressing these in our future work together.

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